

UTILIZATION AND VALIDITY OF NONVERBAL CUES  
IN THE STRUCTURED INTERVIEW

BY

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This work is dedicated to my supportive, patient, and ever loving husband, Tom, who has helped me become all that I am, and all that I will ever be; to my wonderful and caring parents, who always believed in me and who instilled in me the ambition and strength to reach for my goals; and to my two brothers for their constant encouragement and inspiration.

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The purpose of this study was to determine if nonverbal cues are utilized by interview raters, are related to performance ratings, and contribute incrementally to the validity of a structured interview. Simulated job interviews with 60 managers from 4 utility companies were recorded on videotape. Supervisors provided performance ratings. Undergraduate raters (N=167) watched the videotaped interviews and rated subjects on 4 dimensions of managerial effectiveness. Eight nonverbal behaviors, including gaze, smiling, hand movement, back/side lean, body orientation, physical attractiveness, dress, and vocal attractiveness, were scored by independent judges.

Nonverbal cues, in combination, were significantly correlated with both interview ( $r=.33$ ,  $p\leq.01$ ) and performance



( $r=.21$ ,  $p\leq.05$ ) ratings. Gaze was the only nonverbal cue which was not only utilized by interview raters, but also was a valid indicator of performance. Independent measures of nonverbal cues did not contribute incrementally to the validity of the interview, suggesting that interview raters were utilizing cues sufficiently.

Results differed according to the sex of the interviewee. Although nonverbal cues correlated significantly with interview ratings for both men ( $r=.30$ ,  $p\leq.05$ ,  $N=32$ ) and women ( $r=.39$ ,  $p\leq.05$ ,  $N=28$ ), correlations with performance substantially differed by sex (men:  $r=-.18$ , n.s.; women:  $r=.67$ ,  $p\leq.001$ ). For women only, combined dynamic cues were both utilized by interview raters ( $r=.31$ ,  $p\leq.05$ ), and significantly correlated with supervisory ratings of performance ( $r=.56$ ,  $p\leq.001$ ). Also, for women, independently rated nonverbal cues added significantly to the prediction of performance, beyond that of interview ratings alone. This indicates that interview raters were not sufficiently utilizing nonverbal cues when judging female interviewees.

It was concluded that nonverbal cues influence structured interview ratings, and are related to supervisory ratings of performance. Gaze, in particular, seems to be a valid nonverbal cue to utilize in the interview. Three explanations are proposed regarding the compelling sex differences found in this study.

## INTRODUCTION AND LITERATURE REVIEW

### Introduction

Despite years of criticism about the interview's low reliability and validity, it has prevailed as one of the most popular methods of selection. Recently developed structured interview techniques have lifted some of the negativity surrounding the use of the interview. Studies that have tested structured interview formats have provided favorable reports of their use to increase the validity and reliability of interviewer's judgments (M. Campion, Pursell, and Brown, 1988; Janz, 1982; Latham, Saari, Pursell, and M. Campion, 1980; Motowidlo, Carter, Dunnette, Tippins, Werner, Burnett, and Vaughan, 1992). Researchers must continue to investigate how to improve the structured interview in order to obtain accurate ratings that identify qualified job candidates.

This study will focus on a set of factors that, research has shown, affects the favorability of interviewer's judgments. These factors are nonverbal cues. The specific focus here is on the effect of nonverbal cues (e.g. body positioning, gestures, facial expressions, voice characteristics, appearance and attractiveness) on the validity with which interviewers make predictions of applicants' future job performance.

In order to establish the direction and contribution of the current study, related literature will be reviewed. First, an overview of structured interviewing will be presented, including an explanation of what is meant by "structured," and a description of different types of structured interview techniques. Second, since it has been suggested that the structure of the interview may affect interviewers' ability to process information presented during the interview, a closer look will be taken of each step of the information processing system and how the structured interview format can affect those steps. The step of greatest interest in the current study is the process of attending to and utilizing cues, particularly nonverbal cues. This focus will lead to a review of studies that have investigated the effect of nonverbal cues on raters' judgments. What types of cues are important, how do they affect interviewers' judgments, and to what degree do they influence judgments beyond that of verbal information? Finally, important issues which need to be addressed by further research in this area will be discussed.

### Structured Interviews

#### The Meaning of "Structure"

Structuring an interview may mean different things to different people. Structure, in the context of the selection

interview, means that the interviewer follows systematic and predetermined rules to observe and evaluate applicants. Structuring may also mean that these rules are applied in the same way for all applicants of a position. These rules may designate the type of questions asked by the interviewer, the elements of an applicant's answer to which the interviewer should attend, and/or the scoring system used by the interviewers to make judgments based on the applicant's responses. We can think of structure in varying degrees. At the low extreme there is the unstructured interview where no, or few, rules exist with regard to conducting the interview, and the interviewer has full discretionary control of the process. At the high extreme there is the very structured interview, where the interviewer only asks predetermined questions and nothing more, and therefore has no discretion. The highly structured interview is, in effect, an orally administered objective test, and could just as well be administered without the interviewer. Although we do not know if there is an optimal degree of structure, there is evidence that some structure is better than none.

For example, in 1949 Wagner noted that an interview should be conducted according to a standardized form. He proposed that an interview can be valid if all information that can be obtained on a candidate is taken into consideration and weighed properly. Furthermore, the interviewer must be skilled at obtaining full and complete information from an applicant, observing significant

behavior, ignoring irrelevant behavior, and synthesizing all information into a valid prediction of success (Wagner, 1949). In fact, Wagner noted that another researcher, McMurray (1947), developed a "patterned" interview that accomplished these objectives. Using McMurray's format, interviewers (1) were trained in the techniques of interviewing, (2) attended to definite job specifications, (3) had a plan and knew before the interview what questions they would ask of applicants, (4) had clinical concepts to use when interpreting and evaluating applicant's responses, (5) checked outside references prior to the interview, and (6) were assessed for their own degree of emotional adjustment and intelligence. McMurray found a significant correlation ( $r=.68$ ) between interviewers' ratings of 587 factory workers and supervisor's evaluations of their work. In another study he found a correlation of .43 between interview ratings and truck drivers' tenure on the job. These suggestions by Wagner and the early findings by McMurray (1947) sound very similar to the rules and formats used, and results reported, of many structured interview techniques of today.

Empirical evidence of the advantage of more structure was presented more recently by Wiesner and Cronshaw (1988) who reported an uncorrected validity coefficient of .35 for structured interviews, but only .11 for unstructured interviews in a meta-analysis of validity studies of selection interviews. Accordingly, the interest and

popularity of the structured interview is based on both long held beliefs (Mayfield, 1964; McMurray, 1927; Schmitt, 1976; Ulrich and Trumbo, 1965; Wagner, 1949; Wright, 1969) and recent evidence (Hakel, 1989; Janz, 1982; Latham, Saari, Pursell, and M. Campion, 1980; Motowidlo, Carter, Dunnette, Tippins, Werner, Burnett, and Vaughan, 1992; Wiesner and Cronshaw, 1988) that structured interviews have an advantage over unstructured interviews.

### Types of Structured Interview Formats

Two well known structured interview formats are the Situational Interview (SI), developed by Latham et al. (1980), and the Patterned Behavioral Description Interview (PBDI), developed by Janz (1982; Janz, Hellervik, and Gilmore, 1986). Another, more recently developed, structured interview format is the Structured Behavioral Interview, developed by Motowidlo et al. (1992). Similarities and differences in format of each of these interview techniques and evidence of the validity and reliability of each type of structured interview provide insight into the advantages of structured interviews over traditional interviews.

First, in the situational interview (SI), questions are presented as hypothetical situations, and ask applicants what they would do if they were in that situation. The SI questions are based on goal theory, or the belief that behavioral intentions are strongly linked with subsequent



behavior. SI questions are derived from a critical incidents job analysis of the job to be filled.

The validity of the situational interview has received support. Latham et al. (1980) reported three studies with concurrent validity coefficients of .46 ( $p < .05$ ,  $N=49$ ) and .30 ( $p < .05$ ,  $N=63$ ) with incumbents, and predictive validities of .33 ( $p < .05$ ,  $N=56$ ) with applicants. The criterion in all cases was supervisor's composite performance ratings of workers. Two additional studies by Latham and Saari (1984) also support the validity of the situational interview. In one study, they reported correlations of interview ratings with concurrent supervisory ratings at .39 ( $p < .05$ ) and with peer ratings at .42 ( $p < .05$ ) ( $N=29$ ). In another study, they reported a predictive validity coefficient of .14 ( $p < .05$ ,  $N=157$ ) between interview scores and composite supervisory ratings. Weekley and Gier (1987) gave evidence of the predictive validity of the situational format when they reported a correlation of .45 ( $p < .05$ ) between interview ratings of 54 individuals applying for a retail sales position and their sales productivity nine months later. Across six studies, validity estimates for the situational interview ranged from .14 to .46 (all significant at the  $p < .05$  level) with a total sample of 378 interviewees. This results in a mean validity of .28 weighted by sample size. Reliability estimates from these same seven studies are adequate. Interobserver reliabilities ranged from .76 to .90, and internal consistency estimates ranged from .61 to .78.

In the second well-known structured interview format, the Patterned Behavior Description Interview (PBDI), applicants are asked to recall specific past experiences, and to report their actual behavior when they were in those situations. This format is based on the theory of behavioral consistency, or the idea that past behavior will predict future behavior (Wernimont and Campbell, 1968). Janz (1989) states that behavior descriptions provided by job applicants reveal specific choices made by those individuals, and the circumstances under which they made those choices. He argues that this type of information reveals behavioral patterns, rather than opinions or impressions, and the more long-standing the applicant's behavior pattern, the more likely it will predict future behavior. The behavioral dimensions tapped by the PBDI questions are derived from the results of a critical incidents job analysis.

There have been two published studies of the validity of the PBDI. The first, by Janz (1982), involved fifteen teaching assistants who were interviewed twice by undergraduate students. Interviewers were divided into two groups. One group received training for the PBDI, and the other group received general instruction on establishing rapport, active listening, etc. The traditionally trained interviewers exhibited greater interrater agreement, but the PBDI-trained interviewers' ratings were significantly correlated, at .54 ( $p \leq .001$ ), with an independent rating of the teaching assistants' effectiveness in class. The



traditionally trained interviewers' ratings only correlated .07 (n.s.) with the criterion. It is important to note that in Janz's study interviewers were not randomly assigned to a training condition, and the sample size was small. These two weaknesses cast speculation on the accuracy of these results.

In response, in a study by Orpen (1985), interviewers were randomly assigned to two conditions of behavior description training and traditional training. Nineteen real applicants for an insurance sales position were each interviewed by at least four of the sixteen total interviewers. Supervisory ratings and the value of insurance sales in one year were both used as criteria. Orpen (1985) reported a correlation of .48 ( $p < .01$ ) between supervisory performance ratings and the ratings made by interviewers trained in the behavioral description technique, versus a nonsignificant validity coefficient of .08 (n.s.) for the traditionally trained interviewers. For the criterion of the value of insurance sold, the PBDI interviewers' ratings validity was .61 ( $p < .01$ ), and the traditional interviewers' ratings validity was .10 (n.s.).

The mean validity coefficient for the Janz (1982) and Orpen (1985) studies is .55, weighted by sample size. However, the small total sample size ( $N=34$ ), again, calls into questions the precision of these results. The test-retest reliability in Orpen's study was .72 and did not differ significantly from that of the traditional unstructured interview. In Janz's study the standard

interview had a greater interobserver reliability than that of the patterned behavior interview, .71 and .46, respectively.

Lastly, the Structured Behavioral Interview (SBI), developed by Motowidlo et al. (1992), consolidates some aspects of both the SI and PBDI techniques, while adding some unique features. The SBI is similar to both the SI and PBDI in that it derives its behavioral dimensions from the results of critical incident job analysis. The questions in the SBI elicit answers representing one or more of the interview dimensions by asking how interviewees behaved in past situations that are similar to situations encountered on the job for which they are applying. Therefore, the SBI questions are similar to, but more structured than the PBDI, since this format requires interviewers to ask the same questions. Additionally, the interviewer using the SBI not only asks a standard set of questions, but also is trained to probe for details of the situation, the interviewee's behavior in that situation, and the outcome that resulted from that behavior. Like the SI, after the interview is completed, the interviewer using the SBI rates the interviewee on behaviorally anchored scales for each dimension.

Motowidlo and his colleagues (1992) reported the SBI's criterion validity, construct validity, and reliability. In three studies using eight telecommunications companies, with a total validation sample of approximately 500 interviewees,

the uncorrected mean estimate of the criterion-related validity of the SBI is .22. In one study they reported concurrent validities ranging from .15 ( $p < .05$ ) to .32 ( $p < .01$ ), with a mean of .25 weighted by sample size varying from 139-146, depending on missing data. In another study, predictive validity coefficients were reported between .13 ( $p < .05$ ) and .25 ( $p < .01$ ), with a mean of .18, weighted by a sample size of 192-195. In a third study, they reported a predictive validity coefficient of .15 (n.s.) to .45 ( $p < .01$ ), with a mean correlation of .33, weighted by a sample size of 30-33. These three studies involved an interview format that measured dimensions important for management jobs. In the third study, however, another format designed for marketing jobs, was also tested. The concurrent validity of the marketing position interview ranged from .05 (n.s.) to .32 ( $p < .01$ ), with a mean of .20, weighted by a sample size of 124-159.

Support for the construct validity of the SBI was based on three results. First, correlations between ratings by interviewers and subjects who listened to tapes of the interviews, and ratings by interviewers and supervisors, were higher for same dimensions (i.e. convergent validity) than for different dimensions (i.e. discriminant validity). Second, SBI ratings were significantly correlated with ratings made with another interview format designed to measure the same, or similar, dimensions. And, finally, the SBI interview ratings were not strongly, or significantly,

correlated with other measures, such as an aptitude test, college grade point averages, or rank in college class, that rely heavily on cognitive ability.

The reliability of the SBI was determined in the first study conducted by Motowidlo et al. (1992) and was based on (1) the correlation between ratings by different interviewers who interviewed the same applicants on different occasions, and (2) the correlation between ratings by pairs of listeners of audiotapes of those interviews. Those reliability estimates were .64 and .63, respectively.

In addition to evidence of validity and reliability of these three particular interview techniques, there are two additional criteria that should be taken into account--namely, freedom from bias and practicality. For the situational interview (Campion et al., 1988; Latham, 1989) and the structured behavioral interview (Motowidlo, et al., 1992) there is significant evidence that these techniques are not biased in favor of race or sex of the applicant. There is no reported evidence regarding the degree of bias in the patterned behavior description interview (Janz, 1982; Janz, 1989).

The practicality of these three interview techniques is evidenced by indicators such as their usefulness for making selection decisions, interviewers' and applicants' perceptions of fairness, and the feasibility of their use. The most apparent test of an interview's practicality may be

its continued use and acceptance by recruiters and managers who use the technique to make important hiring decisions.

In one study, by Latham and Finnegan (1987), interviewers and applicants were asked to report their perceptions of and preferences for the unstructured, patterned, and situational interview formats. Two groups of managers reported that they preferred the patterned to the unstructured interview. They did, however, consider the situational interview significantly better than the patterned on aspects such as the opportunity to compare applicants objectively, and to hire or reject applicants on job related grounds. The SI, however, was perceived as low on ease of preparation. Employees who were recently hired using the three formats did not view one interview method as better, or more preferable, than another. College students, however, who were preparing for a job search, preferred the unstructured interview over the other two formats, because the unstructured format allowed them to sell themselves more effectively, and gave them more freedom to say what they wanted to say.

In summary, for users, in this case, managers, the consensus seems to be in favor of some structure, rather than none. But the jury is still out regarding what format applicants prefer, or whether one particular structured format is more preferable or practical than another to users.

Because the SBI was not included in Latham and Finnegan's (1987) study since it had not yet been developed,

there is a need to conduct a more current survey of users' and applicants' perceptions of the practicality of each interview method for meeting their objectives. Although, if the popularity and widespread use of the structured, behaviorally-based interviews in corporate America is any indication of the practicality of these techniques, then it seems reasonable to argue that they are indeed perceived as useful, feasible, and fair.

Convincing evidence has been presented of not only the overall favorability of structured interviews, but also the results of validity and reliability research of three specific structured interview formats. Additionally, support has been given for the SI and SBI's freedom from bias. Finally, the structured techniques seem more practical than the unstructured interview to interviewers, but evidence of overall practicality is still officially undetermined. One question not yet addressed, however, with regard to the success of the structured interview, is "Why does it work?". In order to try to answer this question theoretical perspectives of interviewing itself must be considered.

#### Theoretical Perspectives on the Effectiveness of the Structured Interview

##### The Validation Model

In order to discuss the possible reasons why structured interviews are more valid and reliable than the traditional,



unstructured interview it must be explained why the latter have had poorer results. According to a model developed by Schwab (1980), when considering the criterion-related validity (or empirical validity) of the interview, it is also necessary to be concerned with the construct validity of the predictor and the criterion used (See Figure 1.1).

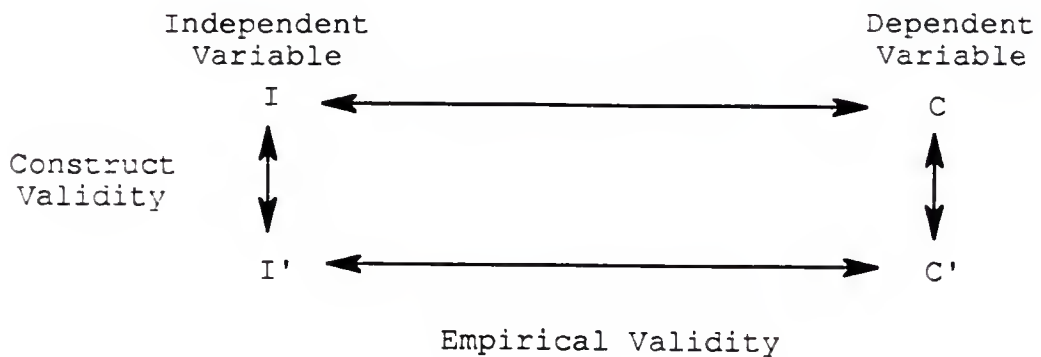


Figure 1.1. An illustration of construct and empirical validity in the employment interview. (Adapted from Schwab, 1980)

The validity correlations reported by researchers are between interview ratings (*I'*) and some type of job performance criterion rating (*C'*). These are indicators of the real constructs of *I*, performance in the interview, and *C*, performance on the job. When a significant correlation is found between *I'* and *C'* it suggests a significant relationship between *I* and *C*. But, there must also be a high correlation between *I* and *I'*, and *C* and *C'* to make that assumption. Therefore, both construct and empirical validity

are necessary to make inferences from the research data (Cronshaw and Wiesner, 1989).

In the unstructured interview, the indicator  $I'$  (i.e. interview ratings) may lack construct validity as a measure of  $I$  in the structured interview because of the failure of the traditional interviewer to obtain relevant, job-related information. Janz (1989) suggested that, in the unstructured interview, the questions interviewers actually ask, and the information for which they probe, have little to do with the constructs that are important for predicting job performance. Necessary and relevant information may not be consistently uncovered in an unstructured interview (Mayfield, 1964).

Also,  $I'$  may lack construct validity as a measure of  $I$  because of the influence of interviewer biases (such as similar-to-me and contrast effects). Interviewers who use unstructured interviews have much self discretion, thereby allowing individual differences, such as differential attention and weighting of information, to come into play. These biases and individual differences can interfere with the collection of a relevant sample of the true domain of information about the applicant ( $I$ ). Likewise, interviewers who are not guided by any specific rules or structure tend to focus on how the applicant responds in the limited context of the interview session, rather on long term patterns of behavior. This allows the impression management strategies of the interviewee to influence judgments to a greater degree (Dipboye, 1992; Janz, 1989).



Therefore, the lack of construct validity of  $I'$  may attenuate the criterion-related validity coefficient between  $I'$  and  $C'$ . In response to the low reliabilities and low validities of unstructured interview techniques arose the development of structured interview formats.

There is not one widely accepted theory regarding why structured interviews work. The advantage of the structured interview developed by Janz (1982), Latham et al. (1980) and Motowidlo et al. (1992) may be due to the fact that the questions are job-related because they were systematically derived using critical incidents job analysis. If questions are more job-related, then applicants can provide more relevant information in their answers for interviewers to use for predicting effective job performance. Therefore, structured interview ratings ( $I'$ ) that are based on those relevant answers would have greater construct validity, because they would more accurately reflect the true predictor of  $I$  (see Figure 1.1). Similarly, the structured interview format may have greater validity results because interviewers' judgments are more reliable. The extensive training typically involved in the use of structured formats, the standardization of questions across interviewers, and the provision of behaviorally anchored rating scales may all contribute to increased interrater reliability. Overall, the methodological aspects of structured formats seem to improve the  $I' - I$  linkage, resulting in improved reliability and construct validity of the interview ratings, and subsequently

strengthen the I' - C' linkage, reported as the criterion-related validity (Cronshaw and Wiesner, 1989).

Aspects of a structured format, such as the job-relatedness of the questions, the presence of predetermined rules for conducting the interview, and the use of behaviorally anchored scales to make ratings, may each contribute to the construct and empirical validity of the ratings. This explanation, however, may be only part of a more comprehensive explanation of the advantages of the structured interview. One can not forget that between the time the interview questions are asked and the interviewer makes a rating or judgement, an important phenomenon occurs--the processing of information. The structure of the interview, particularly the methodologies employed, may improve the effectiveness of the interviewers' information processing capabilities, that, in turn, affect the validity of the interview (Eder, Kacmar and Ferris, 1989).

#### The Information Processing Model

The interviewer processes information by progressing through five steps (Lord, 1985). The first three steps constitute the input of information, including (1) selective attention to informational cues, (2) the comprehension and encoding of those cues, and (3) storage and retention into memory. After all information has been collected, at some later point, the judge must retrieve the information (step 4)

from memory and translate it into the required judgment or decision (step 5) (Lord, 1985).

The methodology of a structured format may affect each step of the information processing system. First, the interviewer must obtain a sample of information from the population of positive and negative information available about the job applicant (Motowidlo, 1986). This sample of information is obtained through interviewers' automatic and/or controlled attentional mechanisms (Ilgen and Feldman, 1983; Feldman, 1981; Schneider and Shiffrin, 1977; Shiffrin and Schneider, 1977). The automatic process of attention occurs without conscious monitoring or awareness. Relevant information must be detected within the context of other, irrelevant pieces of information. When under controlled attentional conditions, individuals are aware of their cognitive processes and consciously seek out relevant applicant information. Both the automatic and controlled attention mechanisms are influenced by the salience of the informational cues. The salience of the cues determines whether or not they are utilized by interviewers (Ilgen and Feldman, 1983; Feldman, 1981; Schneider and Shiffrin, 1977; Shiffrin and Schneider, 1977).

In the structured interview the interviewers are typically trained to attend to information that is relevant to the dimensions on which they will rate the applicant. For example, in the Situational Interview (Latham et al., 1980) raters are aware of the dimensions that each question is

intended to tap, and they are also provided with a scoring guide that gives them examples of a good, moderate, and poor response for each question. Motowidlo et al. (1992) also trained interviewers using the Structured Behavioral Interview format to identify information provided by the applicant that was relevant to the dimension to be measured. The interviewers made ratings on each dimension that were anchored with specific descriptions of behaviors at high, moderate and low levels. This training and the tools provided to interviewers (specific dimensions, structured questions, scoring guides) make their attentional processes more controlled. Additionally, by providing interviewers with carefully developed tools and predetermined rules to follow they are relieved of the responsibility of making those decisions themselves. They then have more time and freedom to attend to interviewees' responses, rather than worry about what question to ask next, or how to score it. Overall, the controlled attention of interviewers using a structured interview format enables them to distinguish relevant, from irrelevant, pieces of information more readily.

Second, the rules and tools of the structured format make it easier for interviewers to encode the information to which they have attended. Encoding occurs when an external stimulus, such as applicants' verbal and nonverbal responses to interview questions, is translated into an symbolic code within the mind of the perceiver (Lord, 1985). Each piece of

information is not encoded independently, but instead, is matched with more general, preexisting categories.

Information that is incongruent with existing categories takes longer to encode, and may require the development of a new category for novel stimuli (Lord, 1985). Ilgen and Feldman (1983) stated that the categories that judges use to process information are a function of their experience and education. Accordingly, the structured interview may improve interviewers' encoding process because they are provided with behavioral dimensions (i.e. categories), trained to use them, and gain more experience with using those same dimensions over time. The dimensional scoring guides that use behaviorally-anchored scales give them a relevant bases upon which they can identify and categorize interviewees' responses. Therefore, they are better able to make sense of and integrate the wealth of information presented to them during the interview by matching it with predetermined behavioral categories.

After information is encoded it is stored in short-term memory, or a "workspace" (Wyer and Srull, 1980). In many cases of social perception, that information may not be needed until some period of time has elapsed. In those situations the information is eventually transferred from short-term to long-term memory until retrieval. In the context of the interview, however, there is very little time, often a matter of minutes or, at most, hours, between when the information is received and when it is retrieved for



evaluation. Therefore, we will assume that, under most interviewing conditions, it does not enter long-term memory. The short retention period helps to minimize the loss of detailed information, and the interviewer is not limited to using only the prototypes of the encoded categories, for information output.

For information output, the interviewer must retrieve and integrate encoded information, and then formulate a judgment of the applicant based on that information. These steps often occur contiguously (Lord, 1985). The information recalled could be both behavioral and dispositional (Feldman, 1981). There has been much criticism about using traits to make personnel decisions, rather than behaviors, due to the subjective assessment of personality attributes and judges' tendencies to define traits differently. Instead, more objective, behavioral information is recommended for personnel decisions. When making hiring decisions, the behaviors of the job candidate are of greatest interest, since these should predict how they will perform on the job. In the structured interview, since the scoring guides with which interviewers make their ratings are based on specific behaviors, their ability to recall and rate behavioral information may be improved.

Overall, the rules and methods used in structured interviews have the potential to influence each step of the interviewers' information processing system. Motowidlo (1986) noted the importance of the information processing

system for making personnel decisions and stated that "the accuracy of an evaluative judgment depends upon how well the input sample of impressions represents the population of information, how well the retrieved sample of impressions represents the input sample of impressions, and how well the judgment represents the retrieved sample of impressions" (p. 6). If a structured format results in more efficient processing of information by the interviewer, then the validity of those decisions is improved.

Within the context of both an information processing model and a validation model, we have theoretically implied reasons for the advantage of structured interview formats over unstructured formats. It would be infeasible, if not impossible, to demonstrate all of these implications at once. Instead we would like to narrow our focus for this study to one stage of the information processing system--that of attention and the utilization of cues. In order to do this we turn to another model, by Brunswik (1956), that limits itself exclusively to the process of cue utilization.

#### The Brunswik Lens Model

The Brunswik lens model provides an approach for researchers to examine (1) the influence of applicant attributes on interviewers judgments (cue utilization), (2) the actual relationship between each attribute and the criterion (ecological validity), and (3) the overall

relationship of interviewers' judgments of the applicant to the criterion (achievement).

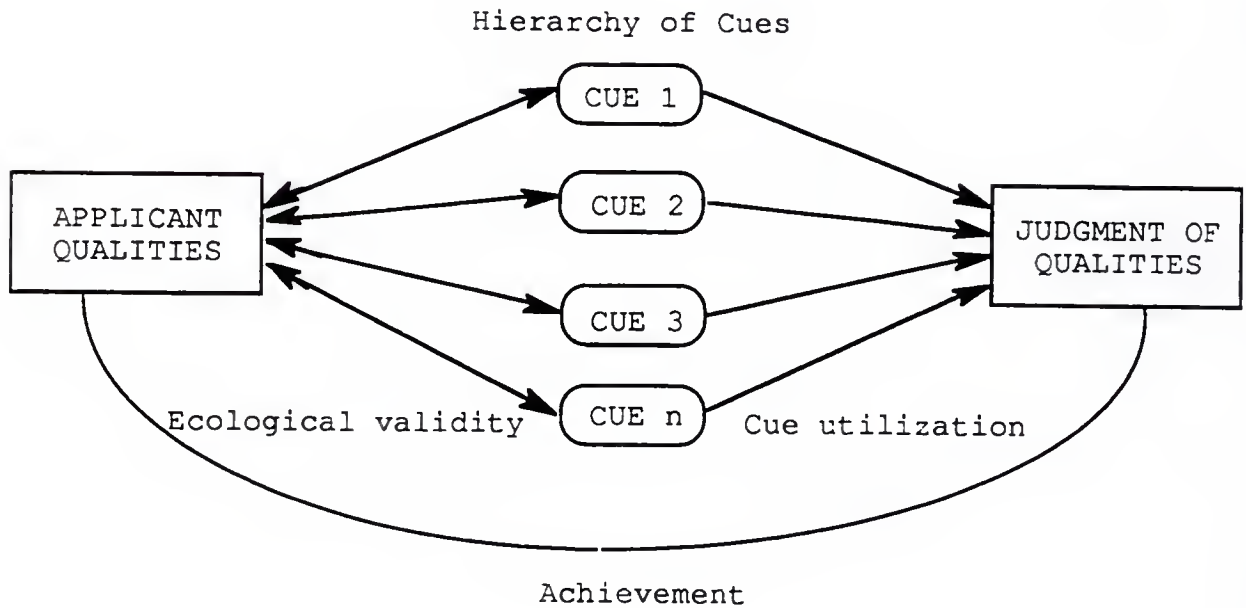


Figure 1.2. A modified version of the Brunswik lens model.

The level of achievement is a function of ecological validity and cue utilization. In other words, the accuracy of an interviewers' judgment varies with whether he or she utilizes valid cues, and the consistency with which cues are utilized (Dipboye, 1992). If an interviewer has knowledge about which pieces of verbal and nonverbal information presented during the interview are relevant for predicting the criterion, and uses those cues to make hiring decisions, then he or she has identified valid cues and is utilizing them appropriately.



Few studies in the employment interview literature have used the Brunswik lens model. In their 1982 review, Arvey and Campion encouraged more use of the lens model, yet ten years later, there has been only one known application of this model by Gifford et al. (1985) for interview research. Borkenau and Liebler (1992) claimed they were the second to use the entire lens model in a study of person perception. Although they focused on situations where targets and raters are strangers, much like an interview, they did not explicitly use an employment interview setting. Furthermore, though many studies have investigated interviewers' utilization of nonverbal cues, or variables that correspond to only the right side of the lens model, only one study, conducted by Anderson and Shackleton (1990), explicitly used the Brunswik lens model. This body of literature will now be reviewed.

#### Attention to and Utilization of Nonverbal Cues in the Interview

The interview is, by definition, a face-to-face discussion between the applicant and the interviewer, but interviewers do not attend only to what applicants say. Much evidence indicates that interviewers also attend to and evaluate nonverbal cues presented by interviewees (Gifford et al., 1985; Imada and Hakel, 1977; McGovern and Tinsley, 1978; Raza and Carpenter, 1987; Young and Beier, 1977). Several

researchers have investigated whether those cues provide information that influences hiring decisions, above and beyond that provided by verbal and more objective (i.e. resume) information. Schmitt (1976) suggested that nonverbal sources of information were more important than verbal cues, and a combination of both verbal and nonverbal information had the greatest influence on differences in interviewers' ratings of job applicants. Amabile and Kabat (1982) go so far as to suggest that when subjects' verbal responses conflict with their behavior, interviewers tend to base their evaluations more on actions than words. Even when there is no conflict, the variance accounted for by nonverbal cues has exceeded that of verbal content in some studies. Young and Beier (1977) found that eye contact, smiling and head movement accounted for 87% of the variance in interviewers ratings of applicant qualifications. Sigelman and Davis (1978) found that nonverbal behavior accounted for 56% of the variance in the interviewers' evaluations. In two other studies (Argyle, Salter, Nicholson, Williams and Burgess, 1970; Walker, 1977), researchers reported that nonverbal cues accounted for 10.3 and 10 times more variance, respectively, than that due to verbal content.

Systematic research on the effect of nonverbal behavior on social interaction has been conducted in only the last thirty to thirty-five years, and specifically within the context of the interview only in the last twenty years. Before reviewing this body of literature different types of

nonverbal behaviors will be identified and operationally defined.

### Identifying and Defining Nonverbal Cues

There are three specific types of nonverbal cues that have been studied as having an effect on interviewers' employment decisions--dynamic, static and paralinguistic cues. Dynamic cues are those that involve some type of movement that can be changed from moment to moment. Examples of dynamic cues include smiling, gesturing, gaze, head movement or nodding, body orientation, and posture. Static cues are characteristics of an individual that cannot readily be altered in a given situation. Age, gender, physical attractiveness, dress, and cleanliness are examples of static cues. Obviously the latter three can be altered over time, but, for example, in a job interview the applicant has the same clothes, hairstyle, scent, etc. for the duration of the interview. Paralinguistic cues refer to characteristics of vocalizations. The rate, volume and tone with which someone speaks, their ability to articulate words, as well as the time spent talking and length of pauses before answers, are examples of paralinguistic cues.

There is not a consensus regarding which nonverbal behaviors are important for predicting interviewers' judgments. Edinger and Patterson (1983) identified eleven "nonverbal involvement behaviors" that determine the degree

of involvement between individuals in social settings. These behaviors include interpersonal distance, gaze, touch, body orientation lean, facial expressiveness, talking duration, interruptions, postural openness, gestures of relational nature, head nods, and paralinguistic cues (volume, speech rate, and intonation). Within the context of an interview, where the applicant's behavioral strategy is designed to create some positive impression on the rater, Edinger and Patterson noted that the most important nonverbal involvement behaviors seemed to be divided, depending on the criterion. First, gaze and facial expressions (i.e., smiling, eye contact) were the most influential on perceptions of likability, interest, pleasantness, credibility, and the favorability of the applicant. Second, interpersonal distance and touch were most influential on perceptions of assertiveness, social activity, and favorability.

Another way to determine the possible importance of cues may be to simply identify which cues are being studied. A review of 19 studies (Anderson, 1960; Anderson and Shackleton, 1990; Brunswik, 1956; Cann et al., 1981; Cash and Kilcullen, 1985; Forbes and Jackson, 1980; Gifford et al., 1985; Hollandsworth et al., 1979; Imada and Hakel, 1977; Kinicki and Lockwood, 1985; Kinicki et al., 1990; McGovern et al., 1979; Parsons and Liden, 1984; Rasmussen, 1984; Raza and Carpenter, 1987; Sterrett, 1978; Wexley et al., 1975; Young and Beier, 1977; Zuckerman et al., 1990), in which at least one nonverbal cue was found to have an effect on

interviewer's judgments, shows that some researchers study only one nonverbal cue, others study several, but rarely ever are the same combination of cues studied. Eleven of these 19 studies measured or manipulated eye contact, making it the most commonly studied dynamic cue. Smiling, gesturing, and posture have also been frequently studied (7, 5, and 5 studies, respectively). Of the static cues, physical attractiveness has received the most attention (7 of the 19 studies), with gender and appropriateness of dress also of interest to researchers (4 and 3 studies, respectively). Paralinguistic cues of voice articulation and modulation have been included in three studies each, and voice loudness, pauses before answering, and time spent talking have been investigated twice.

This review of 19 studies only reveals what cues researchers have identified as worthy of investigation. It cannot determine from this information which cues are the most significant. Also, it is unclear whether two researchers who both studied the effects of gesturing, for example, defined "gesturing" in the same way. Few of these researchers explicitly defined the cues under study. Many researchers rely on the assumption that behaviors such as eye contact, smiling, and head nodding are commonly defined and understood. As Burgoon and Baesler (1991) stated, "The result is that many measurement decisions in the nonverbal arena are governed more by happenstance, history, or cost than by traditional measurement criteria" (p. 57).

Other researchers prefer to use the definitions set forth by others, such as Mehrabian (1972), a psychologist studying nonverbal behaviors in various social settings. Mehrabian set forth scoring criteria for several categories of nonverbal and implicit verbal behaviors. He noted that these scoring criteria were derived from a variety of experimental findings, and included only those cues that yielded significant findings. He divided the behaviors into five dimensions that he identified as the immediacy dimension, the relaxation dimension, movements, facial expressions, and vocalizations. The immediacy dimension included behaviors such as touching, physical distance, forward lean, eye contact, observation and orientation. The relaxation dimension included arm position asymmetry, sideways lean, leg position asymmetry, hand relaxation, neck relaxation, and reclining angle. The movement dimension included head nodding, head shaking, gesticulation, trunk swivel, rocking, self-manipulation, object-manipulation, leg movement, foot movement, and duration walking. The facial expression dimension included such behaviors as facial pleasantness, facial activity, and facial dominance. And, finally, the verbalization dimension included speech error rate, halting quality, speech volume, length and number of statements, number of questions, verbal reinforcers, pleasantness, positive and negative verbal content, speech rate, and vocal activity.



Mehrabian (1972) operationally defined these behaviors. For example, eye contact was defined as occurring when the communicator and the addressee look into each other's eyes, and would be measured as the duration of time that the behavior occurs. Or, as another example, gesticulation was defined as the number of movements of the hands or fingers, cyclical, side-to-side, forward-back, and up-and-down movements, scored as one unit each.

Rasmussen (1984) was one of the few researchers who gave a detailed description of how the nonverbal cues of interest were measured. He investigated five nonverbal cues--eye contact, smiling, hand gestures, head nodding, and tone of voice. He defined and quantified them in the following way:

Eye contact: any period during which the interviewee looked directly at the interviewer (i.e., camera), quantified as a percentage of total time.

Smiling: not specifically defined, but quantified as a percentage of total time.

Hand gesture: a back and forth movement of the hands equals one occurrence of a gesture, quantified as the number of occurrences.

Head nodding: an up and down movement of the head equals one occurrence of a nod, quantified as the number of occurrences.

Tone of voice: an enthusiastic versus flat tone, quantified dichotomously.

Not only have researchers failed to explicitly indicate how the nonverbal cues were operationally defined, but they also often failed to explain why they chose to take either a macroscopic or microscopic approach to the measurement or

manipulation of those cues. Some researchers combined a number of cues together in a macroscopic approach (Imada and Hakel, 1977; Kinicki et al., 1990; McGovern et al., 1979; Rasmussen, 1984; Wexley et al., 1975). Multiple behaviors were combined into a single variable called nonverbal "involvement", "immediacy", "enthusiasm" or other terms. Other researchers have taken a microscopic approach by using single, discrete nonverbal cues in order to identify their individual effects on the criterion of interest (Gifford et al., 1985; Hollandsworth et al., 1979; Parsons and Liden, 1984; Raza and Carpenter, 1987; Sterrett, 1978). The microscopic approach usually measures behaviors as frequency counts, durations or judgments within brief time frames, by using highly reliable coder observations, or a physical apparatus (Burgoon and Baesler, 1991). These latter studies, however, are few, and more emphasis on the effects of specific cues has been encouraged. Imada and Hakel (1977) suggested that additional research was needed to "tease out the effects of specific nonverbal cues as well as different combinations of cues on selection decisions" (p. 300). McGovern, Jones, and Morris (1979) also suggested "further research needs to be done to identify the weightings given to specific visual and vocal components of interviewees nonverbal behavior" (p.178). These challenges must still be met.



### Research of Nonverbal Cues Presented in the Interview

A handful of studies have focused mainly on the effect of physical attractiveness, a static cue, on hiring decisions. A few other studies have exclusively investigated paralinguistic cues. The bulk of the nonverbal cue literature, however, is focused on the effects of dynamic cues, or some combination of the three types. First, studies of dynamic and combination cues will be reviewed and discussed. Next, research that has been done on solely physical attractiveness and paralinguistic cues will be presented. Finally, contrary findings will be presented.

Studies of dynamic and combination cues in the interview

In many of the studies that have investigated dynamic cues, or a combination of cues, researchers have used videotapes of simulated job applicants and manipulated nonverbal behaviors presented in those videos. A study by Imada and Hakel (1977) provided the impetus for more laboratory research using videotaped applicants when they found no significant difference in hiring decisions between live interviewers and observers of recorded interviews. Imada and Hakel (1977) were not only interested in the the medium through which judges observed nonverbal cues, but also the effect of those nonverbal cues on interview impressions and decisions. They manipulated nonverbal cues by training a female applicant to vary her nonverbal behavior as either

high ("immediate") or low ("nonimmediate") while verbally responding in a consistent manner to the interviewer's questions. In the immediate condition, the applicant exhibited behaviors such as greater eye contact, more smiling, more attentive posture, less interpersonal distance, and a direct body orientation. In the nonimmediate condition the applicant had no eye contact, no smiling, a slouched body posture, greater interpersonal distance, and and indirect body orientation. Seventy-two subject were assigned to either the immediate or nonimmediate condition, and to one of three conditions of either participating in a live interview as the interviewer, observing the live interview from the same room, or observing the live interview on a television monitor from another room. The main effects for the three conditions of rater proximity, and interaction effects were not significant. However, results indicated that nonverbal cues had a significant effect on interviewers impressions and decision to hire. Particularly, the immediate applicant was rated as being more likely to be accepted, more successful, more qualified, better liked, having more desirable characteristics, more motivated, more competent, more satisfied if given the position, and, as a result, was recommended more often for the position. Nonverbal information accounted for an average of 43% of the variance.

McGovern (1976; McGovern and Tinsley, 1978) conducted a study in which 52 professional personnel representatives rated one of four videotaped employment interviews. McGovern

manipulated the level of nonverbal behaviors and the sex of the job applicant in each videotape, while keeping verbal content the same. Low levels of nonverbal behaviors were defined as minimal eye contact, low energy, lack of affect and voice modulation, lack of speech fluency, and frequent speech disturbances. A high level of nonverbal cues included maximal eye contact, high energy, exhibited affect and voice modulation, fluid speech and no speech disturbances. The 10 factors identified by the researchers as critical for the interviewer's judgment were the applicant's ability to communicate, aggressiveness and initiative, self-confidence, enthusiasm and motivation, intelligence, leadership potential, maturity, persuasiveness, pleasant personality and sociability, and positive attitude. The level of nonverbal involvement had a significant and favorable effect on ratings made by the judges on all 10 dimensions measured, but particularly on ratings of applicants' enthusiasm and motivation, self-confidence, persuasiveness, and pleasantness of personality. Eighty-eight percent (23 of 26) of those who saw the high nonverbal applicant reported that they would have asked him or her back for a second interview. One hundred percent (all 26) of the subjects who saw the low nonverbal candidate reported that they would not have recommended inviting the applicant for a second interview. McGovern et al.'s (1979) replication of the prior study confirmed these findings using students rather than professional personnel representatives as observers.

Although students were more lenient, of those who viewed the interviewee with a high level of nonverbal behaviors, 87% reported that they would accept him or her. Of those who rated the interviewee exhibiting low levels of nonverbal behaviors, 70% reported that they would have rejected the applicant.

Wexley, Fugita, and Malone (1975) used videotaped, simulated loan application interviews in their study of nonverbal cue utilization. They manipulated two levels of nonverbal enthusiasm, represented by either high or low eye contact, gesturing, smiling, and appropriateness of voice tone, on the tapes. Three levels of suitability to receive a loan (high, average, or low) was also manipulated through the provision of objective loan application information. Seventy-eight student raters read the loan applications, observed the videotapes, and rated applicants' suitability to receive a loan. A significant main effect was found for both nonverbal enthusiasm and suitability. Those applicants who exhibited the high levels of nonverbal behaviors received more favorable evaluations by raters.

In another study by Young and Beier (1977), applicants in a simulated, videotaped employment interview varied their nonverbal behaviors in response to instructions from the researcher to either exhibit more eye contact; more eye contact and smiling; more eye contact, smiling and head movement; or minimal eye contact, smiling and head movement. Applicants followed scripts to control verbal content. Those

who were rated by independent judges as actually engaging in more eye contact, smiling, and head movement were evaluated by a different set of judges as more deserving of the job. An independent rating of physical attractiveness was not found to be a significant predictor of hiring evaluations.

In response to the popularity of using videotaped interviews to manipulate nonverbal behavior Rasmussen (1984) argued that the problem with these studies was that nonverbal behaviors were isolated, thereby researchers were ignoring other important variables, such as verbal behavior and resume credentials. Rasmussen used simulated interviews recorded on videotapes in order to vary the levels of both verbal and nonverbal behaviors. Four tapes were created to represent either appropriate and relevant, or inappropriate and irrelevant scripts for verbal responses, and either high or low levels of nonverbal behaviors. Nonverbal behaviors which were manipulated included the degree of eye contact, smiling, hand gesturing, head nodding, and tone or modulation of voice. In addition to viewing the videotapes, subjects were provided with simulated resumes that included either excellent academic achievement and highly relevant work experience (high) or low academic achievement and little previous work experience (low). Eighty subjects rated the applicant on the videotape on their qualifications for the job, on a scale from poor (1) to superior (25). Resume credentials accounted for the greatest amount of variance, and both resume information and verbal content had

significant main effects on the criteria. The nonverbal behaviors alone had a relatively small effect. Rasmussen concluded that these findings are not necessarily contrary to prior research of the effects of nonverbal cues, but merely indicate that when there is variability in resume credentials and verbal responses then the additional information provided by nonverbal cues may not be relevant. On the other hand, when members of an applicant pool are relatively similar in regard to verbal content and credentials, nonverbal behaviors could have an important impact on interviewers' decisions, as other studies that control for those variables have indicated. In addition to those main effects, Rasmussen reported a significant and interesting interaction effect between verbal content and nonverbal behavior. When verbal content was good, high levels of nonverbal behavior resulted in even higher ratings, but when verbal content was poor, high levels of nonverbal behavior produced lower ratings. In other words, the presence of more nonverbal behaviors seemed to enhance the magnitude of the effect of verbal content, not the direction.

These six laboratory studies using videotaped, simulated interviews have received some criticism for their lack of generalizability to a real interview situation (Hollandsworth, Kazelskis, Stevens, Dressel, 1979; Parsons and Liden, 1984). The variance in nonverbal behaviors manipulated in those taped interviews may have been



artificially inflated by the researcher in comparison to how real job applicants behave when interviewed.

One important field study that addressed this criticism was conducted by Parsons and Liden (1984). These researchers investigated the effect of nonverbal cues within the context of an actual, structured employment interview. Eight interviewers rated a total of 517 applicants on both nonverbal cues and a final judgment of overall qualifications. The eight cues included poise, clothing neatness, personal cleanliness, posture, articulation of speech, voice audibility and understandability, pauses before answers, and eye contact. Two separate scales were used to make the judgment, or final rating. For the interviews in which the first scale was utilized, interviewers rated applicants on a scale from not qualified (1) to highly qualified (5). The other applicants were rated on a 3-point scale as rejected, accepted, or conditionally accepted. There was substantial multicollinearity among ratings of nonverbal cues, with correlations ranging from .54 to .90. The correlations between nonverbal cues and interviewer ratings of applicant qualifications ranged from .64 to .81 (N=251). These researchers also found that nonverbal variables of articulation and eye contact were significant predictors of each type of hiring decision on the independent samples (N=251, N=266). Clothing and cleanliness were the least influential cues. Furthermore, nonverbal cues added significantly to the rating of applicant qualifications, even

after accounting for variance of objective data, such as application blank information, and applicants' verbal responses to questions regarding their scholastic performance, extracurricular activities, and previous job experiences (N=232). Nonverbal information alone predicted 73% of the variance of interviewers judgments and, when subsequently added, objective information increased the variance accounted for by only 2%. Parsons and Liden's (1984) findings are similar to those of another field study, previously conducted by Forbes and Jackson (1980), who used real job applicants, and found that they were most favorably rated when they engaged in more eye contact, smiling, and head movement.

Slightly different results were reported by Hollandsworth et al. (1979) who also conducted a field study, and included verbal content information as well as nonverbal behaviors as variables of interest. Eighteen on-campus college recruiters were asked to rate real candidates (N=338; mean per recruiter = 4.6) on six nonverbal behaviors, the appropriateness of the content of their verbal responses to questions, and to indicate whether they would hire the candidate (1=not a chance, 4=definitely hire). The six nonverbal cues included eye contact, appropriate loudness of voice, body posture, speech fluency, personal appearance, and composure. Hollandsworth et al. reported that the content of the verbal responses was the single most important variable in a discriminant analysis. The applicants' fluency of

speech and composure were second and third in importance, respectively. Body posture, eye contact, loudness of voice, and personal appearance were also significant, in that order. These findings are not totally contrary to the literature supportive of the favorable effects of nonverbal cues. They do suggest, however, that it is the verbal content, not the nonverbal behaviors, on which interviewers primarily base their judgments.

Overall, these laboratory and field studies provide overwhelming evidence that several types of nonverbal behaviors may influence interviewers' judgments. Next, research studies that have exclusively studied one type of cue will be reviewed. First, research on the effects of physical attractiveness on interviewers' impressions and decisions will be presented, then research on only paralinguistic cues.

#### A closer look at physical attractiveness

As defined earlier, physical attractiveness is a static cue that the applicant does not, or possibly can not, vary during the course of the interview. Much of the research conducted on the effect of static nonverbal cues on interviewer decisions has focused mainly on the variable of physical attractiveness.

One of the earliest studies of the effect of appearance or attractiveness on others' judgments was conducted in 1956 by Brunswik. He used 25 psychology students to rate

photographs of 46 Army personnel on variables of intelligence, energy, likability, and good looks. The students rated the soldiers, and the soldiers rated each other. Brunswik investigated, but found no support for, the mediating effect of external facial characteristics (i.e. nose height, forehead height, and overall body height) on the relationship between actual intelligence and student raters' estimated intelligence and personality.

As mentioned previously, an early study by Young and Beier (1977) failed to find support for the effect of physical attractiveness on interviewers' decisions to hire. Those researchers noted that this finding was interesting, considering previous, supportive results (Dipboye, Fromkin, and Wiback, 1975; Dipboye, Arvey, and Terpstra, 1977; Cash, Gillen, and Burns, 1977). Young and Beier suggested that perhaps when nonverbal behaviors were present that physical appearance was less important as a source of information for the interviewer.

In more recent studies, Kinicki and Lockwood (1985) did find support for the effects of physical attractiveness. They had 24 professional recruiters conduct 3 to 4 real interviews of 91 students as part of an interviewing skills workshop. The recruiters rated interviewees on five variables, including occupational knowledge, personal drive, ability to express ideas, appearance, and attractiveness. The first four ratings were combined into an overall "interview impression" score, based on a subsequent factor

analysis. Other predictors of work experience, extracurricular activities, professional objective, college major and grade point average, and honors received, were collected using personal data sheets filled in by applicants. These were also reduced to two predictors--work experience and academic achievement--as the result of the factor analysis. The same recruiters also indicated applicants' suitability for hire and interviewing skills, that were treated as the criterion variables. Recruiters' interview impressions of applicants significantly correlated .69 ( $p < .05$ ) with suitability for hire and .75 ( $p < .05$ ) with interviewing skill. The independent variable of attraction also correlated significantly with the criteria, .66 and .65 ( $p < .05$ ), respectively. Relevant work experience and academic achievement correlated significantly, however less strongly, with just one criterion, interviewing skill, .27 ( $p < .05$ ) and .20 ( $p < .05$ ), respectively. Therefore, Kinicki and Lockwood concluded that recruiters were relying more on subjective information of interview impressions and attraction, rather than concrete, objective information, when making their employment decisions.

Another study by Kinicki, Lockwood, Hom, and Griffeth (1990) supported the previous findings. These researchers reported that 3 nursing directors' judgments of 186 nursing applicants relied more on interview impressions, including applicants' appearance, attitude, job interest, and communication skills, than resume credentials. In this study



the independent variable of attraction was not included. Interview impressions combined with interviewers' perceptions of applicants' work experience and education explained 42% ( $p < .05$ ) of the variance in hiring recommendations, whereas resume data only accounted for 1%. With regard to the effect of that information on the validity of the interview, Kinicki et al. found that resume credentials did not predict performance any better than interview impressions, even though the resume cues predicted 14% ( $p < .05$ ) of the variance in performance.

Many other studies have investigated the effect of attractiveness on interviewers' decisions, two of which are Cash and Kilcullen (1985) and Cann, Siegfried and Pearce (1981). Cash and Kilcullen found that applicants who were attractive, well-qualified for the job, and male were most preferred when judges made hiring decisions from their fictitious resumes and attached photographs. Cann et al. also found that the attractiveness and sex (males preferred) of the applicant positively affected the hiring decision made by raters. The sex of the applicant, sex of the rater, and the sex-stereotype of the job for which they are interviewing all seem to moderate that relationship (Cash, Gillen, and Burns, 1977; Heilman and Saruwatari, 1979; Jackson, 1983).

One of the few field studies that investigated the effects of applicant attractiveness on actual employment interviews of 171 applicants for a variety of different jobs was conducted by Raza and Carpenter (1987). These



researchers collected demographic information (i.e., interviewer age and sex, applicant age and sex, job) for each interview, as well as having 8 professional interviewers rate applicants on physical attractiveness, intelligence, likability, skill level for the job, hirability and acceptability of the applicant as an employee. Hirability and employability were the criterion variables. These two hiring decision variables correlated significantly with ratings of intelligence, physical attractiveness, likability, and skill level. Hirability was most strongly related to perceived skill level, and employability was most strongly associated with intelligence and likability.

Overall, these studies provide evidence that the physical attractiveness of the applicant can influence ratings made by interviewers. However, whether or not physical attractiveness has the same impact when relevant verbal content is taken into account is still unclear. These researchers were mainly interested in studying only one static nonverbal cue, that of physical attractiveness, much like researchers who are only interested in studying a single paralinguistic cue.

#### A closer look at paralinguistic cues

A rather different paralinguistic complement to the research on physical attractiveness has been recently introduced by Zuckerman, Hodgins, and Miyake (1990) who investigated the effects of vocal attractiveness on

interviewers' judgments. They found strong support for the notion of vocal attractiveness between judges who agreed on what characteristics constitute attractive versus unattractive voices. These researchers reported that applicants rated as vocally attractive received more favorable personality ratings than vocally unattractive applicants. Thirty years earlier, Anderson (1960) investigated the effect of a very different type of paralinguistic characteristic on an interviewer's decision to hire. He was interested in whether the amount of time that the interviewer or interviewee each spent talking had any effect on interviewer judgments. Anderson reported that in the interviews where applicants were selected for the job (N=70), the interviewer spent significantly more time talking, and there was significantly less silent time, when no one spoke, than in interviews where applicants were rejected (N=45). Applicants who were selected also spent less time talking and the total duration of the interview was less than for rejected applicants, but those differences were not statistically significant.

#### Contrary findings

Up until this point we have presented research that confirms that nonverbal cues, whether they be dynamic, static, or paralinguistic, have a favorable and significant impact on employment decisions or judgments of applicant suitability made by interviewers. One study in which

researchers reported evidence to the contrary was by Sterrett (1978). This researcher created eight videotapes of a male job applicant displaying high and low levels of eye contact, hand gestures, formality of dress, and length of pause before answering. The verbal content of the applicant's answers was held constant. One hundred and sixty managers from the insurance industry observed these tapes and rated the applicant on eight traits that Sterrett claimed were typical traits considered in the hiring process. These traits included ambition, motivation, self confidence, self organization, responsibility, verbal ability, intelligence, and sincerity. No significant relationships were found between the nonverbal cues and traits assessed. It should be noted that the criteria in this study differed from much of the other nonverbal cue research that used specific employment criteria, such as decision to hire or qualifications for the job. Here, observers of the videos assessed several traits that may, or may not, have been related to the job to be filled.

#### Issues of Concern and Future Directions

A careful look at the body of research on nonverbal cues has helped to illustrate some gaps that must be filled by further research in this area. There are three particular issues that will be discussed here. First, the effect of nonverbal cues on interview validity, rather than only

favorability, must be investigated. Second, ratings of nonverbal behaviors must be made by independent, unbiased judges. Third, the measurement of nonverbal cues should take place at a microscopic level. These matters will subsequently be addressed in the current study.

#### Validity vs. Favorability

First, the research reviewed has had as its criterion of interest the favorability of hiring decisions. The main issue has been whether or not applicants are hired, are recommended for hire, are more suitable for the job, or whether they possess attributes that are deemed important to be successful on the job. This research has shown that nonverbal cues have a significant impact on the favorability of interview judgments. But, favorability is only one of two important properties of the decision to hire an job applicant. The other property is the accuracy of the decision. Favorability is the degree to which the job applicant is positively evaluated. Accuracy is the correctness of the judgment (Motowidlo, 1986). It is appropriate to consider the accuracy of the selection decision since it requires a cognitive estimation of probability, or behavioral prediction, rather than simply an evaluative judgment of favorability. If we treat performance ratings as "true scores", then accuracy is how well the decision to hire corresponds with how the applicant

eventually performs on the job. A necessary condition for accuracy is validity (Sulsky and Balzer, 1988). Therefore, the interest here is not on an actual measure of accuracy, but rather on validity. In other words, what effect do nonverbal cues have on interview validity?

Only Gifford, Fan Ng, and Wilkinson (1985) have investigated interview validity, rather than the favorability of interviewers judgments. They videotaped 38 interviews for a real job opening of a temporary, part-time position as a research assistant in a university. The tapes were viewed and applicants evaluated on motivation and social skill by 18 judges who had training and experience in interviewing. Applicants completed a questionnaire to measure their perceptions of their own motivation and social skill. The applicant's self-reports were the criteria assessed in this study. Motivation and social skill were chosen because they were considered important for this job. Seven dynamic nonverbal cues were measured by two trained raters and included the time spent talking, facial regard, smiling, gesturing, trunk recline, self-manipulation, and object-manipulation. Static nonverbal cues also recorded included age, sex, formality of dress and physical attractiveness.

Using the Brunswik lens model, Gifford et al. computed a correlation coefficient, or ecological validity coefficient, between applicant's self-assessed qualities of motivation and social skill and the static and dynamic nonverbal cues. Applicants who perceived themselves as very motivated were

mostly males, dressed more formally, and reclined more during the interview. Applicants who perceived themselves as more socially skilled also dressed more formally, gestured more, and spent more time talking. These applicants were also mostly male and older.

Interviewer cue utilization was computed as the correlation between the nonverbal cues and the judges' ratings of the applicants' motivation and social skill. Applicants who smiled, gestured, and talked more were perceived to be more motivated to work. Those who dressed more formally, gestured more often, and talked more were perceived as having more social skill by the judges.

The accuracy of the judges' attributions, as a correlation of those ratings with applicants' self-assessed qualities, was not significant for motivation ( $r=.09$ ), but was for social skill ( $r=.29$ ,  $p=.05$ ). In other words, raters were not using relevant cues when assessing applicants' motivation, but were using the correct cues to assess social skill, and, as a result, were more accurate in their ratings of social skill.

The primary shortcoming of this study by Gifford et al. (1985) is that the measure of accuracy, or achievement score, uses self-reported trait data as a "true" score. Judges were not attempting to predict applicants' behavioral performance on the job. Alternatively, instead of using self-reported traits as the true score, researchers should use the criterion (variable C in Figure 1.1) that interviewers are



actually trying to predict when they make a decision to hire, that is performance on the job.

Kinicki et al. (1990) also addressed the issue of interview validity using performance and other job-related criteria. This study also had many shortcomings, however. They investigated whether interview trait impression predicted actual job success less accurately than did resume credentials, by assessing interviewers' ability to identify interviewee job performance, as well as attitudinal and withdrawal predispositions. As mentioned, the interview ratings consisted of an overall "interview impression" score that included ratings on interviewee attitude, job interest, job-related experience, job-related training or education, communication skill, and the only nonverbal cue assessed, appearance. Performance and retention information was obtained from personnel files, and job satisfaction and organizational commitment was measured using a survey completed by subjects after their third week of employment. The combined interview impression score was used for all the regression analyses in this study. Therefore, no evidence was reported regarding the unique effects of each individual factor. However, correlations between all variables were reported, and ratings of appearance significantly, and negatively, correlated with self-reported job satisfaction ( $r = -.15$ ,  $p < .05$ ), but not the other criteria.

Although Kinicki and his colleagues addressed the issue of validity, it is deficient at meeting the present concerns.

First, they only studied one nonverbal cue, appearance, that was buried within the macroscopic variable of "interview impression". Second, the measure of performance used was not independently collected, and it suffered from range restriction. Third, the attitudinal measures were self-reported and taken after only three weeks on the job.

In a recent study, Ambady and Rosenthal (1993) recognized the importance of using an ecologically valid criterion. They found that ratings made by judges exposed to only small clips of teachers' nonverbal behavior were significantly related to student evaluations of college teachers' and principal's evaluations of high school teachers' effectiveness. This study, however, was not concerned with selection, and ratings did not take place in the context of a selection interview. Rather, clips of nonverbal behaviors were taken from silent videotapes of subjects teaching classes in a university or high school setting.

In another study which addressed interview validity and the relevance of nonverbal cues, Motowidlo et al. (1992) concluded that the information obtained from visual nonverbal behaviors was not necessary for the interview's validity. In other words, the content of applicants' answers was a significant source of validity, since judgments by interviewers who did not have access to nonverbal cues were at least as valid as judgments by interviewers who did. This finding does not entirely contradict previous research that

has supported the importance of nonverbal cues, since it has also been reported that when appropriate and relevant verbal information is available that it is the primary, but not only, influence on interviewers' decisions (Hollandsworth et al., 1979; Parsons and Liden, 1984; Rasmussen, 1984). Of course, additional research is necessary to determine the direction of the effect of nonverbal cues when they are present.

Nonverbal cues may act as either enhancers or suppressors of the interview's validity. If cues are utilized that are irrelevant, in the sense that they do not correspond with the interviewees' true scores on the criterion of interest, then interviewers' judgments will be biased and distorted. If certain nonverbal cues affect interview outcomes, but do not predict job performance, then those cues are a source of invalidity and interviewers must be trained to be less influenced by them when making judgments (Rasmussen, 1984). Schuh (1980) stated "...any preoccupation of the interviewer with non-task relevant cues could clutter primary memory and interfere with the perception of the applicants verbal report...and thereby change the applicant's information before it is needed for recall and prediction" (p. 125). Prevailing practices support this position, because interviewers are often trained to attend only to the content of applicants' responses, thereby ignoring nonverbal characteristics of the applicant when making interview ratings (e.g. Motowidlo et al., 1992).

Conversely, if certain cues legitimately represent the interviewees' true score on dimensions of performance, interviewers may be justified and encouraged to use those cues, in that validity will be enhanced (Arvey and Campion, 1982; Harris, 1989; Motowidlo et al., 1992; Rasmussen, 1984). Especially if certain information cannot, or will not, be explicitly verbally expressed in the interview, then it is legitimate for interviewers to seek and utilize relevant cues to determine the true character of the applicant (Edinger and Patterson, 1983; Schlenker, 1980).

There is a real need to investigate the effect of nonverbal cues on the validity of the interview, using relevant performance, or other job-related, criteria. By doing so one can get at the core of the purpose of the interview--that of selecting applicants who will be good performers on the job.

#### Measurement of Nonverbal Cues

The second issue of concern is the precision and accuracy with which nonverbal cues are measured. More than a decade ago Hollandsworth et al. (1979) criticized researchers of nonverbal behavior for using artificial rather than real interview settings. Researchers were criticized for artificially inflating the variability of cues displayed by applicants in laboratory settings. Researchers who were anxious to get out of the laboratory and conduct real

selection interviews were willing to discard that "control" for more generalizable results, but failed to take into consideration how to measure the nonverbal cues in the real setting. Parsons and Liden (1984) noted in the conclusion of their field study that caution should be used in the interpretation of their results since the nonverbal cues of applicants were not controlled, as they are in the laboratory, nor was an independent measurement taken of those cues.

One year after Parsons and Liden's (1984) study, Gifford et al. (1985) addressed this problem. They trained two independent judges to score occurrences of applicants' nonverbal behaviors and evaluate static cues. For example, gesturing, manipulation of objects, and facial orientation were measured as the proportion of time spent displaying these behaviors. Physical attractiveness and formality of dress were scored on 7-point and 3-point scales, respectively.

Unfortunately, other field researchers did not take the lead from Gifford and his colleagues. It is more common to find studies in which the same person who is making the hiring decision, or judging the appropriateness of verbal responses, is also the one rating the applicant on nonverbal behavior (Hollandsworth et al., 1979; Kinicki and Lockwood, 1985; Kinicki et al., 1990; Parsons and Liden, 1984; Raza and Carpenter, 1987).

Scherer (1982), in discussing the requirements for applying the Brunswik lens model to the study of nonverbal communication, emphasized the need for independent measurement of variables. He noted the necessity of obtaining independent measures of the criterion, the nonverbal cues, and the judgments of observers. Accordingly, independent judges should be trained to accurately identify and measure specific nonverbal cues, in order to obtain more reliable and unbiased measures of those cues.

#### Level of Measurement and Analysis of Nonverbal Cues

The third issue of concern is the level of measurement and analysis of nonverbal behavior. Nonverbal behavior may be measured at either the microscopic or macroscopic level. At the microscopic level each nonverbal cue is measured individually. At the macroscopic level individual cues are clustered together to define a general variable of nonverbal behavior. Individual cues are often not defined for a macroscopic analysis.

For example, Imada and Hakel (1977) operationally defined nonverbal "immediacy", a macroscopic variable, as greater eye contact, smiling, attentive posture, gestures, smaller interpersonal distance and a direct body orientation. Wexley et al. (1975) defined their macroscopic nonverbal variable of "enthusiasm" as high or low amounts of eye contact, gesturing, smiling, and appropriate tone of voice.



In both cases, individual cues were neither individually defined, nor individually measured. Since macro-level variables do not necessitate the careful and specific definition of each nonverbal cue, analyses can only take place at the macroscopic level.

With the measurement of microscopic cues, both the individual cues and some combination of those cues can be analyzed. This level of measurement is essential to determine not only whether nonverbal behavior, as a whole, is utilized in the interview and related to performance, but also to determine which particular cues are the most relevant. For example, an interviewee's hand movement may not be related to performance, but the time they spend smiling is related to performance. These findings would have important implications for training interviewers. Interviewers could be taught which relevant cues to attend to and utilize when making interview judgments, rather than being taught to ignore all nonverbal cues and attend only to verbal content. These distinctions can only be determined by measuring and analyzing each cue separately.

Even when nonverbal cues are measured individually, it is the combination of these cues which is of greatest interest. Knapp and Hall (1992) suggested that it is the combination of individual parts of the nonverbal behavioral system which provides the best understanding of the system's purpose. People do not only smile, or only move their hands. Rather, their behavior consists of multiple signals which

together contribute to the message sent to the receiver of those cues.

Van Hooff (1982) suggested that in order to interpret nonverbal behavior we should use larger functional units of behavior rather than molecular behavioral elements or acts. These molar units, he suggested, enable researchers to record and compile more meaningful, complex behavioral processes. He cautioned that the connections between behavioral elements, or acts, tend to get lost if a molecular description of the behavior is used (Van Hooff, 1982).

Brunswik's (1956) lens model also indicates that a combination of nonverbal cues, rather than individual cues, influence person perceptions and judgments. Brunswik's hierarchy of cues (see Figure 1.2) suggests that certain cues are more important than others, or, if combined, individual cues would carry different weights.

In summary, it is important to recognize that naturalistic nonverbal behavior is not exhibited in unconnected parts, but rather as an orchestrated whole. Measuring individual nonverbal cues at the microscopic level allows for analyses of both composite and molecular nonverbal cues.

#### Summary of Issues to be Addressed in the Current Study

In reaction to the research that has been conducted thus far, three issues have been presented regarding the purpose

of these studies and the methodologies used to achieve those purposes. These three issues highlight (1) the need to investigate the effects of nonverbal cues on interview validity rather than favorability, (2) the need to use independent ratings of those cues for analysis, and (3) the need to measure nonverbal behavior at the microscopic level. In the current study these needs will be met.

## PRELIMINARY STUDIES AND THE CURRENT STUDY RESEARCH QUESTIONS

In preparation for the current study it was necessary to conduct three preliminary studies. In the first study, the structured interview was developed, actual interviews were collected on videotape, and the interview was validated. This study provided evidence of the soundness of the interview questions for predicting management effectiveness.

Second, a sample of the taped interviews was used to determine if visual cues, in general, provide sufficient information for raters to make valid judgments of interviewees. The results of this study were quite compelling, in that, raters who were exposed to only visual cues were able to make valid ratings, and that the sex of the interviewee seemed to play some role in the relationship between interview and performance ratings (Motowidlo and Burnett, 1992).

A third study was conducted to identify which specific nonverbal cues are most likely to be related to behavioral dimensions of management effectiveness. Related literature was reviewed, and empirical evidence was collected. These two sources helped to identify nonverbal cues for investigation in the current study.

After each preliminary study is presented here, their implications for the current study will be discussed. Next,

the research questions for the current study will be presented, as well as reasons why the answers to those research questions are both interesting and important.

#### Study #1: The Development and Validation of the Interview

A structured selection interview will be used as the context of the current dissertation research. The interview dimensions, questions, and format for use in the current study were developed as part of the first preliminary study. Supervisory ratings of performance will be the criterion for the current dissertation research. The measures needed to collect those supervisory ratings were also developed as part of this first study. Additionally, in this preliminary study, interviews were conducted and recorded on videotape, interviewees were rated by the interviewer, and supervisory ratings were collected. The collection of this data allowed for a preliminary validation of the interview.

#### A Structured Selection Interview

##### Development of interview questions and dimensions

An interview system was developed to measure general managerial skills for entry-level managers. Performance dimensions of managerial skill were identified according to prior research (Motowidlo et al., 1992). They included: leadership, forcefulness, teamwork, open-mindedness, consideration, planning and organization, thoroughness, drive, and results orientation. These nine dimensions were

then combined to form four dimensions. This was accomplished by having three doctoral management students carefully read each dimension definition, and then sort the nine dimensions into fewer, meaningful categories based on their similarities and degree of overlap. The four new dimensions are:

Leadership (leadership + forcefulness), Teamwork (teamwork + open-mindedness + consideration), Drive (drive + results orientation), and Planning and Organizing (planning and organization + thoroughness).

Rating scales were developed for each dimension. These scales were behaviorally anchored with general behavioral descriptions at the High, Moderate, and Low level of each scale. These were 7-point scales, where 7 and 6 are at the High level, 5, 4, and 3 at the Moderate level, and 2 and 1 at the Low level. These anchors went through several revisions before arriving at the final scales (see Appendix A).

Next, interview questions were developed to tap each behavioral dimension. As discussed previously, in the structured interview literature there are two basic types of interview questions. Janz (1982) introduced past-oriented questions where interviewees are asked, "Tell me about a time when...". Another type of question, developed by Latham et al. (1980), is oriented toward future behavior and interviewees are asked, "Tell me what you would do if...". There is no sufficient evidence regarding whether one type of question is better than another. As a result, in this study, both types of questions were included. A total of eight



interview questions were developed. Two questions, one of each type (i.e., past-oriented and hypothetical), were developed for each of the four dimensions.

The interview questions were pilot tested using undergraduate students in an elective human resource management class at a large Southeastern university. Twelve students participated in the first pilot test, where two doctoral management students, including this researcher, acted as the interviewers. Questions were revised as a result of the first pilot. The same interviewers conducted a second pilot with 14 different students from the same class. Additional revisions were made before arriving at the final eight interview questions (See Appendix A).

#### Collection of interviews

In order to collect interviews of real managers the cooperation of four utility and telecommunications companies was solicited. Company representatives contacted interviewees to obtain their participation, and schedule the interview appointments. Seventy-three interviews were collected.

Interviews were conducted in three day periods in each company. Approximately eight people were interviewed each day, at hour intervals. Interviews took, on the average, thirty to forty minutes. Each interview was videotaped.

At the beginning of the interview session, before the videotaping began, the interviewer briefly described the

research project and the purpose for which the videotapes would be used. Interviewees were asked to imagine that the session was a real job interview, and to provide real and truthful answers. The videocamera was then turned on.

At this point, the interviewer told the interviewee about the types of questions that they would be asked (past versus future). The interviewer then asked the eight interview questions, as well as probing questions. Half of the interviewees were asked the past-oriented questions first, and the other half were asked the future-oriented questions first.

At the conclusion of each interview the interviewer collected demographic information and asked the interviewee if they had a preference for one or another type of question. Demographic information was obtained by directly asking the interviewee for their job title, job tenure, organizational tenure, a brief description of their job duties, and their age. Additional demographics recorded by the interviewer included race and sex.

Interviewees were also asked to compare the two types of questions, past- versus future-oriented. The actual questions were: "As you know we used two types of questions in this interview, past-oriented and the hypothetical. Which type do you think applicants would prefer? Which type seemed more relevant to your job?". Responses were recorded as either past, future, both, or none (see Appendix A).

### Interview ratings

The interviewer rated interviewees using the four behaviorally anchored rating scales of leadership, teamwork, drive, and planning and organizing, for each type of question. This resulted in eight ratings for each interviewee.

### Supervisory Ratings of Job Performance

#### Development of performance rating scales

The same four dimensions and accompanying scales used for the interview were also used for the supervisors' ratings of their subordinate's performance on their current job. The supervisors' form has a more narrative format for the behavioral anchors on each scale, than the bullet-type sentences on the interview form. The supervisors' form also includes a brief description of the project and detailed instructions on how to fill-out the form .

In addition to the four dimensions of Leadership, Teamwork, Drive, and Planning and Organizing, supervisors were asked to rate individuals on a dimension of Overall Performance. They also provided information regarding how important they felt each dimension was for the job that their subordinate performs (see Appendix B).

#### Collection of performance ratings

Each company representative distributed the performance rating forms to the appropriate supervisor of each

interviewee. The forms were accompanied by instructions that they be returned directly to the researchers. Sixty-five supervisory ratings, or 89% of the original 73 interviews, were returned.

Supervisors reported, on average, that Leadership skills were "important" (mean=3.2, s.d.=1.13), Teamwork was "very important" (mean=4.2, s.d.=0.72), Drive was "very important" (mean=4.2, s.d.=0.67), and Planning and Organizing was "very important" (mean=4.0, s.d.=0.78). None of the four dimensions was rated "not at all important" by any supervisor. These responses indicated that these dimensions were appropriate for assessing the general effectiveness of entry-level managers.

#### Validation of the Interview

In order to determine the validity of the entire interview, and of each type of question, interview ratings by the interviewer were correlated with supervisory ratings.

First, the four dimension ratings were correlated within question type. The average correlation for past-oriented questions was .40 and for hypothetical questions was .39. This justified the combination of dimension ratings into total scores for each type of question. Also, an interview total score was computed across question type. This involved averaging the past-oriented and future-oriented score on each dimension, and then summing the four averages.

Next, the total scores for each type of question and the overall interview totals were correlated with performance. The correlation of performance with past-oriented questions was .31 ( $p \leq .01$ ), with future-oriented questions  $r = .22$  ( $p \leq .05$ ) and with the total interview score  $r = .30$  ( $p \leq .01$ ). These results should be interpreted with caution since the interview ratings were made by only one rater.

#### Summary of Preliminary Study #1

The development and collection of interview and performance ratings for 65 interviewees were described here. The correlational analysis of interview ratings with performance ratings indicated that both past-oriented and future-oriented questions are significantly correlated with performance.

#### Study #2: Aural and Visual Sources of Validity (Motowidlo and Burnett, 1992)

The current dissertation research study will investigate the effect of nonverbal cues on the validity of the structured interview. But first, it was necessary to determine what, if any, effect visually-based information had on interview ratings. The results of this second preliminary study legitimized the further investigation of the role of nonverbal cues on the validity of the interview.

### Purpose of Study and Research Questions

The purpose of this second preliminary study was to determine the effect of visual cues on the validity of a structured interview. The primary research question was: How valid are judgments based only on visual cues for predicting job performance? Secondary research questions included: What is the relationship between judgments made when only visual cues are available and when both aural and visual cues are available?; and, What is the relationship between aurally based judgments and visually based judgments?

### Methods and Procedures

The videotaped interviews, described in Study #1, were the stimulus in this study and the criterion was the supervisory performance ratings. Interview ratings were collected from 194 undergraduate students. These student raters either a) watched and listened, b) only listened (with no picture), or c) only watched (with no sound) to 40 of the 65 videotaped interviews. Additionally, raters either saw and/or heard the portion of the original interview where interviewees responded to past-oriented question, or to the responses to future-oriented questions. This design resulted in 6 (3 forms of cue availability x 2 types of questions) different conditions.



There were an average of 32 raters per condition. All 40 interviews, combined into 10 sets of 4 interviews, were presented in each condition. Each rater rated 4 interviews and each interview was rated by an average of 3.2 raters in each condition.

### Summary of Results

The correlations between interview ratings of the past-oriented questions and performance for the aural/visual, aural only, and visual only conditions were .45 ( $p \leq .05$ ), .32 ( $p \leq .05$ ), and .27 ( $p \leq .05$ ), respectively. The correlations between the hypothetical questions and performance for the aural/visual, aural only, and visual only conditions were .16 (n.s.), .24 (n.s.), and .29 ( $p \leq .05$ ), respectively. Pooled ratings, across question type also correlated significantly with performance for the aural/visual ( $r = .36$ ,  $p \leq .05$ ), aural only (.33,  $p \leq .05$ ), and visual only (.32,  $p \leq .05$ ) conditions. These results address the primary research question, and confirm that visually based interview judgments can be valid predictors of performance.

Second, significant correlations were found between visually based judgments and judgments made when both visual and aural cues are available. This was true for both ratings based on past-oriented questions ( $r = .51$ ,  $p \leq .01$ ) and future-oriented questions ( $r = .46$ ,  $p \leq .01$ ). The pooled visually based ratings correlated significantly ( $r = .68$ ,  $p \leq .01$ ) with the

pooled ratings made when both visual and aural cues were available. Furthermore, both visual and aural cues contributed independently to the variance explained in ratings made when both types of cues were available. These results address the second research question, and indicate that there is a strong positive relationship between visually based ratings and ratings made from both aural and visual information.

Third, judgments made by raters who were presented with only visual cues and those presented with only aural cues were significantly correlated for the past-oriented questions ( $r=.49$ ,  $p\leq.01$ ) and marginally significant for the future-oriented questions ( $r=.25$ ,  $p=.06$ ). The pooled ratings of raters who only watched the interviews correlated .53 ( $p\leq.01$ ) with pooled ratings of those who only heard the interviews. This result addresses the third research question and may indicate that there exists some redundancy between these two types of cues.

As an exploratory analysis, the sex, age and race of interviewees were examined as potential influences on the validity findings. Although age and race were not related to performance or interview ratings, the sex of the interviewee had a significant relationship with both performance ( $r=-.33$ ,  $p\leq.05$ ) and visually based interview ratings ( $r=-.40$ ,  $p\leq.05$ ). This may indicate that sex differences play some role in correlations between interview and performance ratings, particularly when visual cues are available.

Summary of Preliminary Study #2

The results of this study were quite intriguing. First, raters who were exposed to only interviewees' visual cues were able to make valid ratings. It was concluded that visual cues play a potentially important role in interview validity.

Second, visually based ratings and aurally based ratings were highly related. One explanation for this finding may be that similar personality traits underlie both sets of judgments. In this case, aural and visual cues would share common variance. Alternatively, it may be systematic error variance which is shared by raters of these two types of cues.

Third, the sex of the interviewee seemed to play an important role in the relationship between interview and performance ratings. One possibility for this result may be that women exhibit different visual cues than do men. The nonverbal cues women tend to show may be judged negatively by raters who are assessing potential management effectiveness. On the other hand, men and women may be behaving in similar ways, but interpretations of those behaviors by raters may differ by sex.

### Study #3: Identifying Important Nonverbal Behaviors

Before conducting the current study of the effect of nonverbal cues on the validity of the interview, the specific nonverbal cues had to be chosen. This third preliminary study served to identify those nonverbal behaviors that were the most relevant for the purpose of the current study.

#### Overview

In order to choose the specific cues for the current study those cues must be identified which are considered the most likely to be relevant for predicting job performance. Rather than associating the actual nonverbal behaviors directly with performance, it is presumed that nonverbal behaviors reflect personality traits which, in turn, are related to managerial performance. In other words, rather than stating that effective managers smile more often than ineffective managers, one can state that smiling is associated with agreeableness, a trait considered important for effective management.

To justify the choice of certain dynamic, static, and paralinguistic cues for the current study, traits believed to underlie the four job-related dimensions - leadership, teamwork, drive, and planning and organizing - must be linked to cues that existing research indicates are relevant reflections of those same traits.

### Linking Performance Dimensions with the Big Five Personality Traits

Researchers who have investigated the co-occurrence of behaviors and traits have mainly used a five factor model of trait assessment. These five factors were derived in several studies across different samples that found five fairly strong factors of personality assessment (see Tupes and Christal, 1992). These factors are Extroversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect.

Extroversion, or Surgency, is defined by traits such as talkativeness, frankness, adventurousness, assertiveness, sociability, energetic, composed, interest in opposite sex, and cheerfulness. The second factor, Agreeableness, is defined by several traits including good-natured, not jealous, emotionally mature, mildness, cooperativeness, trustfulness, adaptability, kindness, attentiveness to people, and self-sufficiency. Traits that load negatively on the Agreeableness factor include assertiveness, talkativeness and orderliness. The third factor, called Conscientiousness or Dependability, is defined by traits of orderliness, responsibility, perseverance, and conventionality, as well as smaller loadings on the variables cooperativeness, mildness and emotional stability. The fourth factor is called Emotional Stability or the opposite label used is Neuroticism. If using the first label the variables that

load highest on this factor include placid, poised, non-hypochondriacal, calm, and self-sufficient. Secondary variables on this factor are lack of jealousy, emotional maturity, cooperativeness, trustfulness, adaptability, responsibility, perseverance, and independent-mindedness. The fifth factor is called Culture or Intellect and is defined by traits such as intellectual, imaginative, artistically sensitive, openness and polishedness.

To link these five personality factors with the job-related dimensions six doctoral students were asked to determine which traits seemed most indicative of each dimension of leadership, teamwork, drive, and planning and organizing. Each judge was provided with a list of 34 trait adjectives which have been used to define the Big Five personality factors (Tupes and Christal, 1992). The order of the traits was scrambled. Judges were asked to rate the degree of association between each trait for each of the four performance dimensions on a 5-point scale (5=definitely related to 1=not at all related) (see Appendix C).

There were a different number of trait adjectives representing each personality factor. For each personality factor, mean scores were calculated by averaging the ratings made by judges on those trait adjectives within each performance dimension. For example, for the Leadership dimension nine trait adjective ratings were averaged to form a score for Extraversion. This resulted in five personality



factors scores within each of the four performance dimensions for each of the six judges.

To determine the reliability of judges, intraclass correlations were computed according to the model by Shrout and Fleiss (1979). The corrected intraclass correlation (ICC) for Leadership was .68, for Teamwork .59, for Drive .68, and for Planning and Organizing .72. Based on these estimates of reliability, it was concluded that there was agreement and consistency among judges when they indicated their perception of the relationship between personality traits and performance dimensions.

Additionally, a two-way analysis of variance was computed. The dependent variable was the mean scores on each personality factor within each dimension for each judge ( $5 \times 4 \times 6 = 120$ ). The two independent variables were the personality factors and the judges. There was a main effect for the personality factors analyzed separately for each of the four dimensions, as well as overall. This indicates that there is a significant difference in the pattern of means among personality factors within each performance dimension.

Next, a cut-off was established at 3.0. The top two mean scores within each performance dimension which were greater than or equal to 3.0 would be considered representative of that dimension. The mean scores for each personality factor on each dimension are presented in Table 2.1.

Leadership was most related to Extroversion and Conscientiousness; Teamwork was highly related to Agreeableness, and less so to Conscientiousness; Drive was related to Conscientiousness and Extroversion; and Planning and Organizing was highly related to Conscientiousness, as well as Agreeableness. Note the mean scores for the factors of Emotional Stability and Culture/Intellect were the lowest

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Table 2.1. Means and standard deviations of judges' ratings of personality factors across performance dimensions.

Personality Factors	<u>Performance Dimensions</u>				Planning/ Organizing
	Leadership	Teamwork	Drive		
Extroversion	3.91 (0.81)	3.20 (1.00)	3.70 (1.14)	2.83 (0.99)	
Agreeableness	3.55 (1.10)	4.02 (1.06)	3.12 (1.13)	3.30 (1.23)	
Conscientious	3.77 (1.01)	3.40 (1.22)	3.87 (1.22)	4.27 (0.98)	
Emotional Stability	3.53 (1.16)	3.14 (1.15)	3.09 (1.24)	3.11 (1.30)	
Culture/ Intellect	2.92 (1.02)	2.80 (1.06)	2.75 (1.07)	2.85 (1.01)	

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for each dimension, and did not meet the cut-off criteria for any of the dimensions.

After the performance dimensions were linked to the traits, the next task was to link the traits to nonverbal cues. The outcome is the list of nonverbal cues that will be investigated in this study.

### Linking the Big Five Personality Traits with Nonverbal Behaviors

Strong relationships are frequently found between judgments of personality and objectively measured behaviors or physical attributes (Albright, Kenny, and Malloy, 1988; Borkenau and Liebler, 1992; Dion, Berscheid, and Walster, 1972; Funder, 1983; Funder and Colvin, 1988; Funder and Sneed, 1993; Gangestad, Simpson, DiGeronimo, and Biek, 1992; Kenny, Horner, Kashy, and Chu, 1992). Even when the only information available to judges is the target's physical attributes, trait assessments have been found to be accurate and consensus exists among judges (Cleeton and Knight, 1924; Hunt and Lin, 1967; Norman and Goldberg, 1966; Passini and Norman, 1966). This context, where there is no interaction between judges and targets, and no prior knowledge of one another, is called "zero acquaintance" (Albright et al., 1988). Evidence indicates that judgments made at zero acquaintance are stable even after the judge and target have interacted (Kenny et al., 1992), and the accuracy of trait assessments increases directly with the degree of acquaintanceship (Paunonen, 1989).

While the degree of acquaintance in the context of a selection interview is not zero, it is low. Before the applicant walks through the door for the interview the only information an interviewer typically has is the individual's resume. Interaction between the interviewer and applicant

takes place within a limited period of time, typically 30 minutes. During that brief period the interviewer must obtain adequate information in order to make judgments regarding the applicant's potential to perform on the job.

The interviewer is initially presented with the physical attributes of the applicant (attractiveness, dress, etc.) but as the interview progresses the applicant provides dynamic behavioral and audible cues. All of these cues, researchers have argued, influence the assessment of personality traits, and those traits seem to underlie the behavioral dimensions upon which the interviewer makes ratings.

In order to make these inferences between traits and cues it is essential to measure the behaviors or cues that are indicative of relevant traits (Gangestad et al., 1992). Researchers are only beginning to understand the cues that judges use to make trait assessments, and, therefore, there are no specific guidelines for defining the co-occurrences between traits and behaviors, or as Borkenau called it, "what goes with what" (1992, pp. 297-298). A summary of related literature is presented here which has identified the relation between certain nonverbal cues and three of the big five personality factors of Extroversion, Agreeableness, and Conscientiousness. These relations are illustrated in Figure 2.1.

First, dynamic cues such as smiling, eye contact and gaze, and rapid body movement seem to reflect Extroversion. Kenny et al. (1992) noted that rapid body movement was

correlated at .47 ( $p \leq .005$ ) with Extroversion. They also reported a correlation of .49 ( $p \leq .005$ ) between smiling and this factor. Borkenau and Liebler (1992) reported significant correlations between Extroversion and extensive smiling ( $r = .33$ ,  $p \leq .01$ ) and friendly expression ( $r = .39$ ,  $p \leq .01$ ). These researchers also found less eye contact to be negatively, and significantly correlated with this factor ( $r = -.33$ ,  $p \leq .01$ ). (Argyle, 1988) noted that smiling, gaze, and spatial proximity were correlates of Extroversion. Static

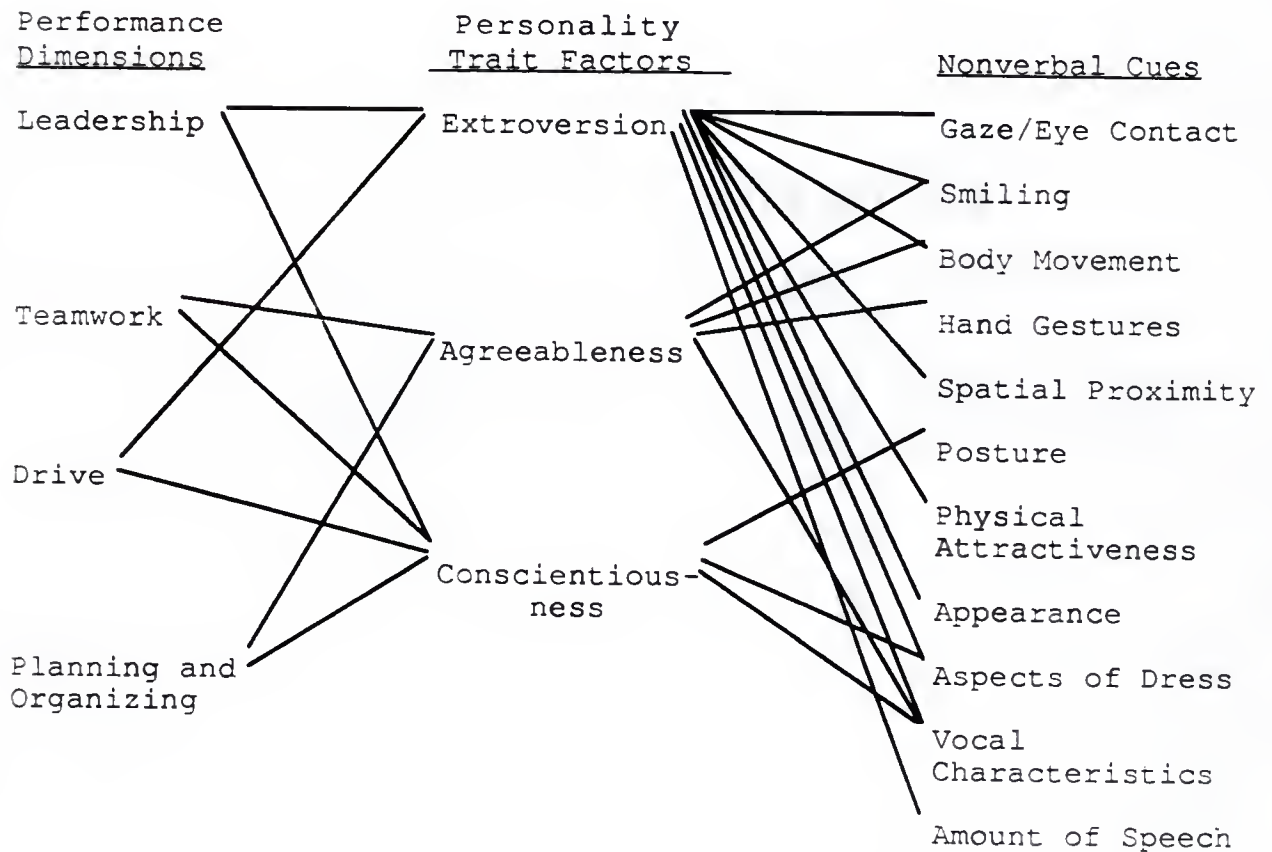


Figure 2.1. Associations between nonverbal cues, traits and performance dimensions.



cues that seem to be related to Extroversion include attractiveness and appropriateness of dress. Borkenau and Liebler (1992) found that attractiveness correlated .37 ( $p \leq .01$ ) with Extroversion, and Albright et al. (1988) reported a correlation of .74 ( $p \leq .05$ ) between the same variables. Kenny et al. (1992) replicated and confirmed Albright et al.'s findings. Borkenau and Liebler (1992) also found that Extroversion was significantly related to an unrefined appearance ( $-.28$ ,  $p \leq .01$ ), showy dress ( $.34$ ,  $p \leq .01$ ), and unfashionable dress ( $-.27$ ,  $p \leq .01$ ). Two paralinguistic cues seems to also reflect Extroversion. Borkenau and Liebler (1992) found a significant correlation between this factor and softness of voice ( $-.26$ ,  $p \leq .01$ ), and (Argyle, 1988) identified amount of speech as a correlate of Extroversion.

Second, dynamic cues that have been found to be related to the second factor, Agreeableness, include smiling, hand movements, and rapid body movement. Kenny et al. (1992) reported a significant correlation of .66 ( $p \leq .005$ ) between smiling and Agreeableness, and Borkenau and Liebler (1992) found a relationship between friendly expression and this factor ( $r = .23$ ,  $p \leq .05$ ). In the study by Borkenau and Liebler (1992) a significant relationship was also found between Agreeableness and frequency of hand movement ( $r = -.23$ ,  $p \leq .05$ ). Rapid body movement was reported by Kenny et al. (1992) as related to this factor ( $r = -.35$ ,  $p \leq .005$ ). The Agreeableness factor is also related to paralinguistic cues, including effortful reading ( $r = .31$ ,  $p \leq .01$ ), easy to understand ( $r = .28$ ,



$p \leq .01$ ), and hectic speaking ( $r = -.25$ ,  $p \leq .01$ ) (Borkenau and Liebler, 1992).

One dynamic cue has been found to be related to the third factor, Conscientiousness. Borkenau and Liebler (1992) reported a significant, negative correlation between relaxed posture and Conscientiousness ( $r = -.29$ ,  $p \leq .01$ ). Static cues related to this factor are associated with dress. Borkenau and Liebler (1992), Kenny et al. (1992) and Albright et al. (1988) all noted significant correlations between dress formality and the Conscientiousness factor ( $r = -.25$ ,  $p \leq .05$  reversed scored;  $r = .44$ ,  $p \leq .005$ ; and  $r = .76$ ,  $p \leq .05$  respectively). Albright et al. (1988) also found that neatness of dress was related to this factor ( $r = .73$ ,  $p \leq .05$ ). Borkenau and Liebler (1992) found one paralinguistic cue, effortful reading, was significantly related to Conscientiousness ( $r = .32$ ,  $p \leq .01$ ).

### Summary of Preliminary Study #3

Evidence and research have been presented regarding "what goes with what". More specifically, judges' ratings indicate what traits go with what performance dimensions, and existing research has been used to indicate what cues go with what traits. These linkages will be used to justify the choice of nonverbal cues for investigation in the current study.

### Implications of Preliminary Studies on the Current Study

These three studies had important implications for the current study. As a result of each preliminary study, important decisions were made regarding the variables of interest and methods of the current study.

### Decision Based on Study #1: Use of the Structured Interview

The structured behavioral interview format developed in Study #1 will be used in the current study. First, the training and tools provided to interviewers using this type of format make the processes of cue attention and utilization more controlled, thereby enabling interviewers to more readily distinguish relevant from irrelevant cues. Second, the validation results confirm the soundness of the interview questions developed to predict general managerial effectiveness. Accordingly, the structured behavioral interview is the appropriate context for this study.

### Decisions Based on Study #2: Type of Interview Question and Sex Differences

First, the results of Study #2 indicated differences in validity of past-oriented and future-oriented types of interview questions. Similar differences were found between interview and performance ratings in Study #1. In both cases, correlations with performance were lower for future-oriented questions than for past-oriented questions. As a

result, it was decided that only the portion of the original interviews where interviewees responded to the past-oriented questions would be included in the current study.

Second, the results of Study #2 imply that the sex of the interviewee may play an important role in the validity of the interview. Accordingly, sex differences will be explored in the current study. The detailed information which will be collected regarding interviewees' nonverbal behavior may help to explain why sex differences were found in Study #2.

#### Decision Based on Study #3: The Choice of Nonverbal Cues

The nonverbal cues that will be investigated in the current study are based on the findings in Study #3 and are presented in Table 2.2. The four dynamic and two static cues were found to be significantly correlated with at least one of the personality factors determined to underlie the behavioral dimensions of leadership, teamwork, drive, and planning and organizing. The paralinguistic cue chosen for investigation, vocal attractiveness, is more global than the paralinguistic cues noted previously (i.e. softness of voice, effortful reading, easy to understand, and hectic speaking). However, Zuckerman, Hodgins, and Miyake (1990) found vocal attractiveness to be significantly related to the favorability of personality ratings. Accordingly, vocal attractiveness is considered, by this researcher, to be more appropriate for the interests of the current study.

Table 2.2. Nonverbal cues of interest in the current study.

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<u>Dynamic</u>	<u>Static</u>	<u>Paralinguistic</u>
Gaze	Physical attractiveness	Vocal attractiveness
Smiling	Dress	
Hand movement		
Back/side lean		
Body orientation		

---

It is assumed that all of these nonverbal cues if exhibited by an interviewee would be considered favorable by interviewers, except for back/side lean. This dynamic cue is often interpreted as a sign of relaxation or boredom (Argyle, 1988; Mehrabian, 1969; Mehrabian, 1972). A relaxed posture also communicates dominance in interpersonal interaction (Argyle, 1988; Mehrabian, 1972). These characteristics are not considered appropriate, nor judged favorably in the context of a selection interview. Alternatively, when an interviewee leans forward they appear attentive, interested, and involved in the interviewers' questions (Bull, 1987; Mehrabian, 1972). Attentiveness and involvement are more appropriate behaviors in an interview. Accordingly, the variable of back/side lean will be reverse scored for analyses in the current study.

#### Summary of the Implications of the Preliminary Studies on the Current Study

As a result of the three preliminary studies the videotaped interviews of the 65 interviewees responding to

the four past-oriented structured interview questions will be used in the current study. Furthermore, the nonverbal cues to be measured in the current study were identified. Finally, sex differences will be investigated as possible influences on the validity of the interview.

### Current Research Study

The focus of the current study is the effect of nonverbal cues on the validity with which interviewers make predictions of interviewees' job performance. The specific research questions of this study will be stated in this section. Also, the reasons for why this study is both interesting and important to researchers and practitioners will be discussed.

### Current Research Questions

Four specific research questions will be asked to determine how nonverbal cues affect interview validity. The first question asks: Do raters of interviewees attend to and utilize nonverbal cues in the interview? This question corresponds to the right side of the Brunswik lens model (see Figure 1.2), or the utilization of nonverbal cues. Cue utilization has been the focus of several research studies on the effect of nonverbal cues on the favorability of interview ratings, but investigating this question in the context of a structured interview is unique. As part of structuring an



interview, researchers and practitioners have emphasized the importance of focusing interviewers' attention exclusively on the content of applicants' answers. This implies that visual cues do not carry important information and should be ignored. The answer to this first research question will help to determine whether or not interview ratings, made using a structured format, are based on information carried by nonverbal cues as well as verbal content.

The second research question asks: Are nonverbal cues associated with performance on the job? This question corresponds to the left side of the Brunswik lens model, or the ecological validity of nonverbal cues. As discussed in the previous chapter, only three research studies by Gifford et al. (1985), Kiniki et al. (1990), and Ambady and Rosenthal (1993) have addressed whether nonverbal cues are related to job performance. However, there were several deficiencies in those studies which will be overcome in the current study.

The third and fourth research questions ask: Do nonverbal cues contribute incrementally to validity after interview ratings are taken into account?; and do interview ratings contribute incrementally to validity after nonverbal cues are taken into account? These two questions correspond to Brunswik's concept of achievement. Both questions are necessary because there is no existing evidence regarding these relations. Again, the issue of how nonverbal cues influence interview validity has not yet been sufficiently



addressed, and these research questions are an attempt to confront that issue.

#### Important and Interesting Implications of the Current Study

Results of this study can contribute to the increasing research effort to improve the interview as a selection device. The structured techniques that have been studied, and are now being marketed in various forms, should not be treated as the only way to improve the interview. We cannot ignore a history of research that has shown that other factors, including nonverbal cues, influence interviewers' judgments.

The investigation of the effect of nonverbal cues on interviewer validity is itself important because, until now, research has only used criteria such as the favorability of ratings or personality traits. This study will take an important step further by using job-related criteria (i.e., supervisory ratings of performance on the job) to assess the overall effect of nonverbal cues. The issue of validity is important to managers and practitioners, as well. They are interested in significant ways to improve interview validity, since validation is the primary criteria used when establishing the defensibility and appropriateness of selection procedures (Cronshaw and Wiesner, 1989).

Last, by independently measuring microlevel nonverbal cues we will be able to "tease out" the individual and

combined effects of those behaviors on validity. Researchers and practitioners are interested in knowing not only whether nonverbal cues are appropriately utilized, but also exactly which cues are used to make valid judgments. Findings of this study could have an important impact on the training of interviewers.

## HYPOTHESES, METHODS AND PROCEDURES

This chapter begins with a statement of the research hypotheses and ends by describing the data analysis which will be used to test those hypotheses. Additionally, methods and procedures will be carefully explained, and the reliabilities of interview, performance, and nonverbal cue ratings will be reported.

### Research Hypotheses

Hypotheses will be presented here which are derived from the previously stated research questions. The four research questions to be investigated are: (1) Do raters of interviewees attend to and utilize nonverbal cues in the interview?, (2) Are nonverbal cues associated with performance on the job? (3) Do nonverbal cues contribute incrementally to validity after interview ratings are taken into account?; and (4) Do interview ratings contribute incrementally to validity after nonverbal cues are taken into account? These research questions correspond to Brunswik's concepts of cue utilization, ecological validity, and achievement, respectively.

### Cue Utilization

With regard to the first research question, it is expected that raters will attend to and utilize nonverbal cues when making interview ratings. This expectation is consistent with the findings in the nonverbal cue literature that interviewers attend to and utilize cues, and that their use affects the favorability of their judgments (Forbes and Jackson, 1980; Gifford et al., 1985; Hollandsworth et al., 1989; Imada and Hakel, 1977; McGovern, 1976; McGovern and Tinsley, 1978; Parsons and Liden, 1984; Young and Beier, 1977).

Arvey and Campion (1982) suggested that interviewers may not view verbal and nonverbal variables as independent. In fact, researchers who have investigated the effect of both verbal and nonverbal information on rating favorability have not suggested that nonverbal information be eliminated completely. Rasmussen (1984) and Hollandsworth et al. (1979) found that verbal content was the primary source of information used by interviewers, but nonverbal behavior still had a significant, albeit smaller effect in both studies. Therefore, it is expected that interviewers will use both types of information cues. Accordingly, the first hypothesis is:

Hypothesis 1. Interviewees' nonverbal cues will be significantly and positively correlated with interview ratings.

### Ecological Validity

Not only is it expected that interviewers will use nonverbal cues, but also that these cues will be related to performance ratings. According to recent research, visual cues can be remarkably accurate indicators of personality traits. If these same traits are important for job performance, then nonverbal cues may be correlated with supervisory ratings of performance. Motowidlo and Burnett (1992, preliminary study #2) found that raters who were exposed to only visual sources of information were able to make valid interview ratings. Ambady and Rosenthal (1993) reported similar results where judgments of college teachers', based on only teachers' nonverbal behavior, were significant predictors of student evaluations of teacher effectiveness. Thus, information communicated through nonverbal behavior seems to be an important indicator of job performance, and should not be ignored. The specific hypothesis is stated as follows:

Hypothesis 2. Interviewees' nonverbal cues will be significantly and positively correlated with supervisory ratings of job performance.

### Achievement

The third and fourth research questions are exploratory in nature and difficult to hypothesize due to a lack of prior evidence or theory to support a specific expectation.

However, following the logic of the Brunswik lens model, if cues are being utilized by those who make interview ratings, and those same cues are related to the criterion of job performance, then the validity of the judgments, as a function of these two relations, may be enhanced.

Assuming raters of the interview are utilizing nonverbal cues and those cues are related to performance, two outcomes are still possible for the third research question. The first possibility is that raters attend to and utilize nonverbal cues, but do not weight them sufficiently when making their ratings. In this case, the addition of independently measured nonverbal cues to interview ratings will explain significantly more variance in the criterion even though raters already took those nonverbal cues into account. Alternatively, if interview raters utilized those cues appropriately, and the information they provide was sufficiently incorporated into the interview ratings, then nonverbal cues would not significantly add to the validity of interview ratings alone.

Again assuming that raters of the interviews are utilizing nonverbal cue information, and that those cues are



related to performance, there are also two possible outcomes for the fourth research question. Even if raters attend to and utilize nonverbal cues, other information, not provided by nonverbal cues, but utilized by raters, can contribute to validity. Therefore, interview ratings would significantly increase validity over nonverbal cues alone. Alternatively, if raters of the interviews took into account only information provided by nonverbal cues, then the addition of interview ratings would not contribute significantly to validity because it would be redundant.

### Methods and Procedures

In this section, the research design and methodology will be described and explained. First, interview, performance, and nonverbal cue measures will be presented. Second, the preparation of the experimental interview tapes and the experimental nonverbal cue tapes will be explained. Third, the resulting sample of interviewees will be described. Finally, procedures followed for the collection of interview ratings and nonverbal cue ratings will be discussed.

## Development of Measures

### Interview and performance measures

The interviews developed and administered on videotape in the first preliminary study, were the stimulus in the current study. The performance ratings collected from supervisors in the same preliminary study were also used as the criterion in this current study (see previous chapter for details).

### Nonverbal cue measures

The development of nonverbal cue measures took place in two steps. First, nonverbal cues were operationally defined, and then the scoring sheets and rating scales were developed.

As noted in the first chapter, few researchers of nonverbal behaviors provide explicit definitions of the cues they study. As a result, there are no widely accepted guidelines for defining and measuring nonverbal cues. The following definitions of the five dynamic cues, two static cues, and one paralinguistic cue of interest in this study were derived from definitions of cues from other nonverbal behavior research (Knapp and Hall, 1992; Mehrabian, 1972; Parsons and Liden, 1984; Rasmussen, 1984). These definitions are as follows:

Gaze occurs when the interviewee looks in the direction of the interviewer's face or head.

Smiling occurs when the corner of the lips are curled upward.

Hand movement occurs when the interviewee moves one or both hands, which includes the part of the body from the wrist to the fingertips.

Back/side lean occurs when the interviewee's body is tilted in a backward or sideways direction.

Parallel body orientation occurs when the interviewee's body is oriented toward the interviewer.

Physical attractiveness is the degree of appeal of the interviewee's physical appearance.

Dress is categorized according to type and color.

Vocal Attractiveness is the degree of appeal of the interviewee's voice.

Next, the scoring sheets and rating scales to measure each of the nonverbal cues were developed. Three different types of measures were needed for the dynamic cues, attractiveness cues, and dress cues, respectively.

Dynamic cues, including gaze, smiling, hand movements, back/side lean, and parallel body orientation, were measured using a counter/timer device. A switch activated the counter/timer each time it was pressed, and a cumulative record was kept of the duration and frequency of each behavior. Independent judges recorded the duration, in seconds, and frequency of the behavior from the counter/timer device onto the scoring sheet. Scoring sheets are located in Appendix D. For the purposes of the current study, however, the actual time an interviewee spent exhibiting specific nonverbal behaviors was determined to be theoretically and

practically more interesting than the frequency, or number of switches from behaving to not behaving. Accordingly, for the current study, the frequency of dynamic cue behaviors was dropped from further analysis.

Both physical and vocal attractiveness were measured using the same 5-point scale. This scale ranged from very attractive (=5) to very unattractive (=1). These rating scales are located in Appendix D.

Dress ratings were divided into three categories for both men and women, and included the type of clothing, presence of accessories, and dominant color of clothing. A 3-point scale was developed to rate the type of clothing according to the level of formality (2=blazer or suit coat, 1=no jacket/dress shirt (men) or blouse (women), 0=other/casual shirt). A 2-point scale was developed to rate the presence of accessories (1=tie (men) or one or more accessories (women), 0=no tie (men) no accessories (women)). And, a 3-point scale was developed to rate the dominant color of interviewees' dress (3=dark, 2=medium darkness, 1=white or light). These rating scales can be found in Appendix D.

#### Preparation of the Experimental Videotapes

##### Tapes for interview ratings

The original 65 videotaped interviews were divided into quartiles according to their total performance score. Sixty

interviews were grouped into 15 sets of 4 by randomly drawing one interview from each performance quartile for each set. As a result, each set of 4 interviews represents the full range of criterion scores. The order of interviews in each set was determined randomly to avoid any relation between order of presentation and performance score. The gender make-up of each set was assessed and appropriate changes were made to ensure that 2 men and 2 women were presented in each set. Due to a lesser number of women in the sample, two sets contained 3 males and 1 female.

#### Tapes for nonverbal cue ratings

The videotapes prepared for the rating of nonverbal cue ratings were extracted from the interview tapes described above. Three new sets of tapes were created. One set was for dynamic cue ratings, a second for physical attractiveness and dress ratings, and a third for vocal attractiveness ratings.

For the dynamic cue ratings, 6 2-minute segments were taken from each original interview. Two segments ("A" and "B") were from the beginning, 2 ("A" and "B") from the middle, and 2 ("A" and "B") from the end of each interview. For example, a 12 minute interview was divided as in Figure 3.1. For interviews longer than 12 minutes, 2 2-minute segments were taken from the beginning, 2 2-minute segments from either side of the midpoint, and 2 2-minute segments from the end. For interviews less than 12 minutes, the

interview was divided into 3 equal parts (beginning, middle, and end) and 2 2-minute segments were taken from each part.

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For interviews = 12 minutes or more: (no overlap)

	BEGINNING		MIDDLE		END	
A	0:00-2:00		2:00-4:00		4:00-6:00	
B			2:00-4:00		4:00-6:00	
TOTAL	2:00		4:00		6:00	
MINUTES						

Figure 3.1. An illustration of the division of interviews into six segments for dynamic cue ratings.

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Therefore, for interviews that were less than 12 minutes in duration, segments "A" and "B" overlapped within, but not across beginning, middle and end segments. The shortest interview was 8 minutes and the longest was 36 minutes, with a mean of 16.4 minutes.

For the dynamic cues two groups of videotapes were prepared. One group of tapes included portion "A" (beginning, middle, and end) from each of the 60 interviews. A second group of tapes contained portion "B" (beginning, middle, and end) from each of the 60 interviews. These tapes were recorded without the sound. Additionally, a 15-second pause was recorded between each 2-minute segment (beginning, middle, and end), and between each interviewee presented. Judges were able to make their ratings during these pauses.

A different videotape was prepared for the physical attractiveness and dress ratings. On this tape 15-second segments were recorded from the beginning of each interview



where the interviewee was neither moving nor talking. These 15-second segments were recorded without the sound. A 15-second pause was recorded between the presentation of each interviewee to give judges time to make their ratings.

A third videotape was created for the vocal attractiveness ratings. A videotape was used for these recordings, rather than an audiotape, in order to preserve the quality of the reproduction of the interviewees' voice. When judges rate vocal attractiveness the picture was concealed. On this tape 15-second segments were recorded of each interviewee talking. The portion of the interview used for these recordings was when the interviewer asked each interviewee which type of interview question they preferred. The actual question was, "As you know, we used two types of questions in this interview, past-oriented and the hypothetical. Which type do you think applicants would prefer? Which type seemed more relevant to your job?". This portion was chosen because of its neutral content and also because responses were similar across participants. A 15-second pause was recorded between the presentation of each interviewee to give judges time to make their ratings.

#### Sample of Interviewees

Of the 60 total interviewees, 15 were from company A, 18 from company B, 12 from company C, and 15 from company D. Thirty-two interviewees were male and 28 female, with a mean

age of 29 years. With regard to race, 43 of the interviewees were white, 10 Black, 2 Asian, 2 Hispanic, and 3 of other races. Fifteen interviewees had job tenure of 6 months or less, 18 had been on their current job between 7 and 12 months, 6 were between 13 to 18 months, 10 had job tenure between 19 and 24 months, 7 had job tenure between 25 and 30 months, and 4 interviewees had been on their current job for more than 30 months.

### Procedures

First, the procedures for training student raters and collecting interview ratings will be described. Next, the procedures for training nonverbal cue judges and collecting nonverbal cue ratings from those judges will be explained.

### Interview ratings

Rater demographics. There were 167 raters of the interview dimensions. Raters were undergraduate students enrolled in an introductory management class at a large Southeastern university. Participation was voluntary. Those who participated received two extra credit points.

Fifty-three percent of the interview raters were male, and 47% female. Their ages ranged from 19 to 40 years old, with a mean age of 21.2. The majority of the raters, 136, were white, 5 were black, 13 Hispanic, 10 Asian, 1 classified

him/herself as "other" in race, and 2 raters did not report their race. Most were college juniors (59%).

Rater training. Instructions to raters of the interviews were delivered via videotape. The instructional video lasted approximately 12 minutes. Subjects followed along in their training packet.

Raters were told that they would watch and listen to simulated interviews of people pretending to apply for a management job in a telecommunications company. They were told to imagine that the applicant pool had been narrowed to two candidates. Their job was to assess the candidates on four dimensions (Leadership, Teamwork, Drive, and Planning and Organizing) based on their performance in the mock interview. The raters were then introduced to each of the four interview dimensions and scales on which they would rate the interviewees. The trainer defined each dimension and read the behavioral anchors of each scale. Next, the trainer read each of the four interview questions. Interview raters were instructed that although each question was designed to tap one particular interview dimension, that there would most likely be some overlap of dimensions in interviewees' responses. Finally, the trainer recommended that raters use the space provided under each question in their packet to take notes regarding interviewees' responses. They were also instructed to wait until the end of each interview to make their ratings on each interviewee. They could refer back to their notes when making their ratings.

At this point, raters watched a practice interview and made practice interview ratings. This gave them an opportunity to listen to an interviewee's responses, see an interviewee, and make ratings on the four scales (see Appendix A).

Collection of interview ratings. After viewing the instructional tape and practice interview, raters watched and listened to four interviews. After they viewed each interview they made their ratings.

At the end of the session, raters answered three manipulation check questions and provided demographic information. The three manipulation check questions were:

- (1) How concerned were you with making accurate ratings of the interviewees? (5=very concerned; 1= not very concerned);
- (2) Were the definitions and levels (high, moderate, low) of the rating dimensions - leadership, teamwork, drive, planning and organizing - clear and understandable to you? (5=very clear; 1=very unclear);
- (3) How much information did you feel you had to make the ratings? (5=a great deal of information; 1=hardly any information).

Each group of raters watched 4 interviews. This resulted in 15 different groups who viewed all 60 interviews. Viewing groups consisted of a minimum of 9 and a maximum of 15 raters. There were 167 total raters. The entire session, including training, and the viewing and rating of the interviewees, took approximately 1 hour and 45 minutes.

### Nonverbal cue ratings

Dynamic cue ratings. Dynamic cues were scored by six judges. Dynamic cue judges were graduate students in the colleges of business and journalism. There were 3 males and 3 females, all of whom were white, with a mean age of 33 years.

Dynamic nonverbal cue judges were individually trained. During these training sessions the trainer defined each dynamic cue and taught judges how to rate each behavior. Then the judges watched three examples of each cue on videotape. The interviewees in those sample tapes were not part of the group of 60 which were later rated. Judges were taught how to use the event recorder and were able to practice using it with the sample interviews. Training lasted approximately 45 minutes.

After each judge was trained they rated 20 interviewees on each dynamic nonverbal cue. Table 3.1 illustrates how the interviews were assigned to judges. First, each pair of dynamic cue judges rated different sets of interviewees for different nonverbal cues. For each nonverbal cue, each pair of judges rated 20 interviewees. For example, for "gaze" the first pair of judges rated interviewees 1 through 20, the second pair of judges rated 21 through 40, and the third pair rated 41 through 60.

Second, each pair of judges rated different sets of interviewees for each nonverbal cue. For example, the first pair of judges, who rated interviewees 1 through 20 for "gaze", rated interviewees 21 through 40 for "smile", 41

Table 3.1. Assignment of interviews to dynamic cue judges.

<u>DYNAMIC CUE JUDGES</u>						
<u>VARIABLES</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Gaze	01-20 A	01-20 B	21-40 A	21-40 B	41-60 A	41-60 B
Smile	21-40 A	21-40 B	41-60 A	41-60 B	01-20 A	01-20 B
Hand Movement	41-60 A	41-60 B	01-20 A	01-20 B	21-40 A	21-40 B
Back/Side Lean	01-20 B	01-20 A	21-40 B	21-40 A	41-60 B	41-60 A
Parallel Orientation	21-40 B	21-40 A	41-60 B	41-60 A	01-20 B	01-20 A

Note: Numbers in cells represent interviewees (1-60) and letters in cells represent the portion of the interview rated (A or B). Portions "A" and "B" each include 3 2-minute segments from the beginning, middle, and end of each interview.

through 60 for "hand movements", 1 through 20, again, for "back/side lean", and 21 through 40, again, for "parallel body orientation".

Third, within pairs, each judge rated either the "A" or "B" portion of the segments. For example, for the first pair of judges rating "gaze", judge #1 would rate portion "A" for interviewees 1 through 20, and judge #2 would rate portion "B" for the same interviewees. When the set of interviewees



was repeated, the judge who had rated portion "A" previously would then rate portion "B" for the same interviewees, and vice versa for the other judge. Therefore, no judge ever rated the same interviewee on the same behavior twice (see Table 3.1).

To summarize, each dynamic cue judge rated 20 interviewees on each dynamic cue. It took judges approximately 2 hours and 20 minutes to rate each dynamic cue. Judges made their ratings over a three day period.

Static and paralinguistic cue ratings. The static and paralinguistic cues of physical attractiveness, dress, and vocal attractiveness were judged by either 4 or 5 different judges. Four of these judges were middle managers at a large, local bank and the fifth judge was a local furniture store manager. Judges received definitions of these cues, and were instructed how to use the rating form. Each judge rated all interviewees.

For the physical attractiveness ratings, 5 judges were shown 15 second segments of the interview. Judges made ratings of physical attractiveness after each interviewee was shown.

Next, for the vocal attractiveness ratings, judges listened, without the picture, to 15-second segments of each interviewee talking. Judges made their ratings of vocal attractiveness after each interviewee was presented.

Dress was rated by 4 of the same judges (2 males and 2 females). Judges, once again, watched 15 second segments of

the interviewees without the sound and rated interviewees on the type, accessories, and color of their attire. See Appendix D for an example of each type of rating scale.

### Reliabilities

After interview, performance and nonverbal cue ratings were collected their respective reliabilities were calculated before further analyses. These reliabilities are reported in this section, along with descriptions of the computations of an interview score, a performance score, and several nonverbal cue scores.

#### Reliability of Raters of the Interview and the Creation of Average Interview Dimension Scores

The intraclass correlation for a single rater was .55. The corrected intraclass correlation was .92 for a minimum of 9 raters, .95 for a maximum of 15 raters, and .93 for an average of 11 raters (Shrout and Fleiss, 1979). Interview dimension scores were averaged across raters, according to the number of raters per interviewee.

#### Reliability of Interview and Performance Dimensions and the Creation of Total Scores

The intercorrelations of the 4 interview dimension scores made by student raters ranged from .71 to .84, with an average correlation of .79 (N=60). As a result, the

dimension scores were combined into a total interview score for each interviewee.

The intercorrelations of the 4 performance dimension scores made by supervisors ranged from .43 to .61, with an average correlation of .52 (N=60). The performance dimension scores were combined to form a total performance score for each interviewee.

#### Reliability of Nonverbal Cue Judges and the Creation of Individual Nonverbal Cue Scores

##### Reliabilities of dynamic cue ratings

The determination of the reliability of dynamic nonverbal cue judges took place in two steps. First, the reliability of the beginning, middle and end segments of the interview was calculated. Second, the reliability of portions "A" and "B" was determined. According to these reliability results, a total duration and total frequency score was computed for each dynamic cue, for each interviewee.

Recall that judges recorded the duration of nonverbal behavior for three 2-minute segments for each interviewee they saw. For each judge, the duration scores for the beginning, middle and end segments were correlated. This resulted in three correlation coefficients. These three coefficients were averaged for each judge. This resulted in six average correlations of duration, one for each judge.

The range of those six average correlations is presented in the first column of Table 3.2. The correlations in the first column correspond to each cell for each dynamic cue in Table 3.1.

Table 3.2. Correlations between the beginning, middle, and end interview segments for six judges.

<u>Dynamic Cues</u>	<u>Range</u>	<u>one</u> <u>judge</u>	<u>two</u> <u>judges</u>
		<u>Average</u> <u>r</u>	<u>Corrected</u> <u>r</u>
Gaze	.40-.78	.61	.76
Smile	.26-.71	.48	.65
Hand Movements	.61-.77	.69	.82
Back/Side Lean	.74-.92	.84	.91
Parallel Body Orientation	.80-.93	.86	.92

The second column in Table 3.2 is the average correlation across the six judges, or the average of column one. The second column represents the average across each row in Table 3.1.

The average correlation coefficients in the second column were corrected by the Spearman-Brown formula for two judges. These corrected average correlations are reported in the third column of Table 3.2. Based on these results the three segments were summed.

Next, correlations were computed between interview portions "A" and "B", which was equivalent to correlating

within pairs of judges. In other words, pairs of judges who rated different portions of the same interviews were correlated with one another (i.e. 1 with 2, 3 with 4, and 5 with 6). This resulted in three correlations, one for each pair of judges. The range of these three correlations are represented in the first column of Table 3.3. The second

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Table 3.3. Correlations between two judges rating interview portions "A" and "B".

		one <u>judge</u>	two <u>judges</u>
<u>Dynamic Cues</u>	<u>Range</u>	<u>Average r</u>	<u>Corrected r</u>
Gaze	.19-.73	.47	.64
Smile	.53-.96	.75	.86
Hand Movements	.78-.91	.84	.91
Back/Side Lean	.69-.85	.76	.86
Body Orientation	.43-.90	.68	.81

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column is the average of the three correlations in the first column. The average correlation was corrected using the Spearman-Brown formula for two judges. The corrected correlation is reported in the third column.

The corrected intraclass correlations between two judges ratings interview portions "A" and "B" based on a sample size of 60 were: .68 for gaze, .69 for smile, .86 for hand movement, .82 for back/side lean, and .82 for parallel body orientation.

These results indicate the reliability of dynamic nonverbal cue ratings. Therefore, the ratings made by each pair of judges were summed to form one score for each dynamic cue for each interviewee.

#### Reliabilities of static and paralinguistic cue ratings

Physical and vocal attractiveness were ratings made by five judges of all 60 interviewees were correlated. The average correlation was .36 for physical attractiveness, and .30 for vocal attractiveness (N=60). The Spearman-Brown formula was used to determine the correlation for five judges. The corrected correlation for physical attractiveness was .74, and .68 for vocal attractiveness. Ratings made by the five judges were averaged to form a mean physical attractiveness score and mean vocal attractiveness score for each interviewee.

Ratings of dress were made by four of the same judges. All four judges rated all 60 interviewees. The average correlation across these four judges for the type of dress was .89, for the accessories of dress was .64, and for the color of dress was .85. The four judges' ratings for each aspect of dress were summed and intercorrelated. The correlation between type and accessories was .21, between type and color was .57, and between accessories and color was .08 (N=60). Based on the results of these two analyses, that there was less agreement on the aspect of accessories between



judges, and there were small correlations between accessories and other aspects of dress, the accessory variable was dropped from further consideration.

A dress total score was computed for each interviewee by judge which was the sum of the type and color of dress scores. Therefore, each interviewee had four dress total scores corresponding to the four judges' ratings. The correlations between these four scores ranged from .91 to 1.00, with an average correlation of .94 (corrected by Spearman-Brown for four judges = .98). As a result, an average dress score was computed for each interviewee, which was the average of the four judges' dress total scores.

#### The Creation and Reliability of a Composite Nonverbal Cue Variable

In the current study, nonverbal cues were defined and measured at a microscopic level. These measures allow for the analysis of nonverbal cues as either individual variables or in combination. The primary analysis will use a combination of all eight of the nonverbal cues measured in this study. This composite cue represents a meaningful whole of interviewees' nonverbal behavior.

The single composite nonverbal cue variable was calculated by adding together standardized values of gaze, smile, hand movements, back/side lean (reverse scored), parallel body orientation, physical attractiveness, dress, and vocal attractiveness. Standardized variables were used

due to substantial differences in the standard deviations of nonverbal cues.

It is important to note that these cues were combined on theoretical and logical grounds, not because they were highly intercorrelated or represented one common factor. In fact, the individual nonverbal cues had generally low intercorrelations, indicating that they were independent of one another. The Brunswik lens model requires that multiple cues not be highly correlated with one another (Paunonen, 1989). Paunonen (1989) argued that low intercorrelations, and thus minimal redundancy, are desirable to ensure that each nonverbal cue has a unique contribution for the prediction of the criterion.

Intercorrelations of the individual nonverbal cue variables which comprise the total cue variable are displayed in Table 3.4. The intercorrelations between the cues are low and generally nonsignificant. The average correlation among all cues is .13. However, gaze was significantly and positively correlated with parallel body orientation and physical attractiveness, and negatively with dress. Also, note the significant correlation between back/side lean and parallel body orientation. This relation is not surprising, given that both of these variables are elements of posture.

Nonverbal cues can also be analyzed individually at the microscopic level. Two additional sets of cues will also be included in the data analysis. These secondary analyses will

be conducted to obtain a better understanding of the underlying effects of the composite nonverbal cue variable.

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Table 3.4. Intercorrelations among individual nonverbal cue variables.

Nonverbal Cues	1	2	3	4	5	6	7
1. Gaze							
2. Smile	.16						
3. Hand Movement	.13	-.01					
4. Back/Side Lean	.23	.08	-.15				
5. Parallel Body Orientation	.28*	.14	.17	.44**			
6. Physical Attractiveness	.26*	.24	.07	-.11	.02		
7. Dress	-.32**	-.04	-.19	-.08	-.14	-.05	
8. Vocal Attractiveness	.01	.06	-.04	.06	-.04	.06	.01

N=60

$p \leq .05$ ;  $p \leq .01$  (two-tailed).

---

First, nonverbal cues were divided according to the type of cues represented, dynamic and static, and a new variable was computed for each type of cue. The dynamic cue variable consisted of the sum of gaze, smiling, hand movements, back/side lean (reverse scored), and parallel body orientation. The static cues of physical attractiveness and dress were combined to form another composite variable.

Vocal attractiveness remained independent as the only paralinguistic cue.

The third set of nonverbal cue variables was comprised of eight independent cues. Vocal attractiveness in this set of variables is the same as the paralinguistic cue in the set of categorical variables.

### Data Analysis

In order to address the first research hypothesis, a one-tailed correlation analysis was conducted between nonverbal cues and interview ratings. If there is a significant correlation between nonverbal cues and interview ratings, then interviewers are utilizing the nonverbal cues.

Second, another one-tailed correlation analysis between nonverbal cues and supervisory performance ratings was conducted. This analysis addresses the second research hypothesis. If there is a significant correlation between nonverbal cues and performance ratings, then nonverbal cues are related to performance.

For the third step of the analysis, two multiple regression analysis were conducted to determine the effect of nonverbal cues on validity. The dependent variable in both regression models was supervisors' performance ratings.

The first model corresponds to the third research question. Interview ratings were entered into the regression equation first, then the nonverbal cues were added. If the change in the multiple correlation is significant then

nonverbal cues are contributing to validity, above and beyond interview ratings alone.

The second model corresponds to the fourth research question. Nonverbal cues were entered into the regression equation first, then the interview ratings were added. If the change in the multiple correlation is significant then interviews are contributing to validity, above and beyond nonverbal cues alone.

These analyses were carried out for the entire sample of 60 interviewees. Then, the same analyses were conducted within the sex of the interviewee.

## RESULTS

### Manipulation Check Questions

Subjects who rated the interviews on the four dimensions of Leadership, Teamwork, Drive and Planning and Organizing responded to three manipulation check questions. They rated on 5-point scales their concern for accuracy, the clarity of the dimensions, and the amount of information they felt they had to make the ratings.

Although the use of student raters may have implications for the generalizability of these research results, the manipulation check indicates that students were considerably concerned (mean 3.79, s.d. 0.68) about the accuracy of their ratings. Next, raters reported that the interview dimensions were clear and understandable (mean 4.25, s.d. 0.67). Finally, student raters reported that, on average, they had a moderate to considerable amount of information to make their ratings (mean 3.44, s.d. 0.77).

### Total Sample Analyses

#### Descriptive Analyses of Variables

The means and standard deviations of the interview scores, performance scores, and nonverbal cue total are found



in Table 4.1. Correlations of these variables with interviewees' sex, age, race, and job tenure are also presented. A clearer interpretation of the nonverbal cue total can be achieved by looking at the individual nonverbal cues, whose means, standard deviations, and correlations with demographic variables are also presented in Table 4.1.

Table 4.1. Means and standard deviations of interview, performance, and nonverbal cue variables and their correlations with demographic variables.

Variables	Mean	s.d.	Correlations			
			Sex	Age	Race	Job Tenure
Interview Score	18.76	4.28	-.04	-.14	-.18	.01
Performance	26.73	4.27	-.08	-.30*	.27*	-.07
Nonverbal Cue Total (stdzed)	0.00	2.94	.16	-.21	.02	.01
Gaze	312.23	53.60	.01	-.19	.15	-.38**
Smile	46.55	51.10	.21	.06	.01	.32**
Hand Movements	176.32	130.01	-.11	-.05	-.04	-.08
Back/Side Lean	361.05	291.14	-.10	.11	-.04	.17
Parallel Body Orientation	447.67	293.41	.25*	-.01	-.12	.10
Physical Attractiveness	2.84	0.60	.10	-.36**	-.06	-.08
Dress	3.69	1.18	.06	.14	-.17	.13
Vocal Attractiveness	3.01	0.56	.03	-.12	.26*	.19

N=60

\*  $p \leq .05$ , \*\*  $p \leq .01$  (two-tailed).

None of the demographic variables were associated with interview ratings or total nonverbal cues. However, age and race were significantly correlated with performance ratings. Age and race were also marginally correlated with each other at  $-.25$  ( $p=.06$ ). There is a pattern of older, minority incumbents and younger, white incumbents in this sample. Due to this intercorrelation clear conclusions can not be drawn from the correlations with performance.

Only a few nonverbal cues were individually associated with demographic variables. Overall, women seem to orient themselves more directly to the interviewer than do men, younger interviewees are more attractive than older interviewees, and the more experience someone has on their the job the more they smile and the less they gaze.

#### Correlations of the Nonverbal Cue Total with Interview and Performance Ratings

In order to address the first two research questions and corresponding hypotheses, a one-tailed correlation analysis was conducted for the nonverbal cue total and interview and performance ratings. The nonverbal cue total correlated  $.33$  ( $p\leq.01$ ,  $N=60$ ) with interview ratings, and  $.21$  with performance ( $p\leq.05$ ,  $N=60$ ). Nonverbal cues were significantly associated with both interview and performance ratings. This supports Hypotheses 1 and 2 and indicates that raters are utilizing nonverbal cues and those cues are valid.

Correlations of Categorical and Individual Nonverbal Cues  
with Interview and Performance Ratings

In order to obtain a better understanding of the underlying effects of the nonverbal cue total, the effects of each type of cue - dynamic and static, and vocal - and individual cues were examined. The correlations of the categorical cues and the individual cues with interview and performance ratings are found in Table 4.2.

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Table 4.2. Correlations of categorical and individual nonverbal cues with interview and performance ratings.

<u>Nonverbal Cues</u>	<u>Interview</u>	<u>Performance</u>
Dynamic Cues	.23*	.13
Static Cues	.15	.17
<hr/>		
Gaze	.20†	.20†
Smile	.08	.07
Hand Movement	.07	-.10
Back/Side Lean	-.05	-.14
Parallel Body Orientation	.16	-.02
Physical Attractiveness	.18	.21*
Dress	.02	.02
Vocal Attractiveness	.21*	.10

N=60

†  $p = .06$ , \*  $p \leq .05$  (one-tailed).

---

These correlations indicate that dynamic cues together, gaze in particular, and vocal attractiveness are related to interview ratings. Gaze and physical attractiveness are related to performance. The finding that gaze is correlated .20 with both interview ratings and performance ratings is very interesting. This is the only valid cue that was also utilized by interview raters. Also note that the correlation of gaze with performance is nearly identical to that of the total nonverbal cue and performance (.20 and .21, respectively). When other nonverbal cues are added to gaze for as a composite of dynamic cues, the correlation of those combined variables with performance decreases to .13. Gaze seems to be a key nonverbal cue for interview validity.

#### The Incremental Validity of Interview Scores and Nonverbal Cues

Before assessing the incremental validity of interview ratings and nonverbal cues, the correlation between interview ratings and performance was computed. This correlation was .35 ( $p \leq .01$ ), indicating that there was significant concurrent validity of the interview.

Next, the third and fourth research questions were tested by determining the incremental validity of interview ratings and nonverbal cues. This analysis was conducted in two steps.

First, the regression model with only interview scores was compared to the model with interview scores and the

nonverbal cue total. This step addressed the third research question, which asks: Do nonverbal cues contribute incrementally to validity after interview ratings are taken into account?

Second, the regression model which included only the nonverbal cue total was compared to the model with nonverbal cues and interview scores. This step corresponds to the fourth research question which asks: Do interview ratings contribute incrementally to validity after nonverbal cues are taken into account.

Significance is achieved if R-squared in the model with both interview score and nonverbal cues is significantly greater than either one alone. The test for significance is an F-test. The change in R-squared and the values of the test for significance of that change are presented in Table 4.3.

Nonverbal cues did not contribute, incrementally, to validity. The addition of nonverbal cues did not significantly increase the variance explained beyond interview scores alone.

Interview scores, on the other hand, incrementally contributed to validity. The inclusion of interview scores explained significantly more variance in performance than did nonverbal cues alone.

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Table 4.3. Regression analysis of incremental validity of nonverbal cues and interview scores.

Dependent variable = Performance Score

Incremental Validity of Nonverbal Cues

<u>Independent Variables</u>	<u><math>\Delta R^2</math></u>	<u>F</u>
Interview Score	.12	
Nonverbal Cues	.01	0.72

Incremental Validity of Interview Scores

<u>Independent Variables</u>	<u><math>\Delta R^2</math></u>	<u>F</u>
Nonverbal Cues	.04	
Interview Score	.09	5.60*

N=60

\*  $p \leq .05$ , \*\*  $p \leq .01$ .

---

Summary of Results for the Total Sample

Nonverbal cues, taken together, were utilized by raters of the interview, and were also related to supervisory ratings of performance. Gaze was the only independent nonverbal cue which was both utilized by interview raters and related to performance ratings. The interview was a valid predictor of performance, but nonverbal cues did not contribute incrementally to that validity.

Analyses By Interviewee Sex

The total sample was divided according to the sex of the interviewee. There were 32 males and 28 females. First, it was determined whether nonverbal behavior differed according to the sex of the interviewee. This was accomplished by



examining differences in the means and intercorrelations of nonverbal cues. Next, the same correlational and regression analyses carried out in the total sample were also conducted for these subsamples.

### Sex Differences in Interview and Performance Ratings and Nonverbal Behavior

#### Mean differences

Means and standard deviations of interview scores, performance scores, and the nonverbal cues are presented in Table 4.4. Mean differences for the variables by sex of the interviewee were tested using t-tests, and are also reported in Table 4.4. Results revealed that the mean interview score and performance score did not differ significantly by sex of the interviewee. The only nonverbal cue that differed significantly by sex was parallel body orientation. Women spent more time oriented toward the interviewer.

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Table 4.4. Means and standard deviations of interview, performance, and nonverbal cue variables by interviewee sex.

Variables	Males		Females		t
	Mean	s.d.	Mean	s.d.	
Interview Score	18.94	4.64	18.56	3.89	.36
Performance	27.03	4.44	26.39	4.13	.58
Nonverbal Cue Total (stdzed)	-.42	2.74	.48	3.14	-1.20
Gaze	311.75	50.52	312.79	57.85	-.07
Smile	44.36	36.47	58.07	59.35	-1.62
Hand Movements	190.03	130.47	160.64	130.05	.87

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Table 4.4--continued

Back/Side Lean	333.94	308.08	392.04	272.73	-.77
Parallel Body Orientation	378.72	302.93	526.46	265.88	-2.01*
Physical Attractiveness	2.78	0.56	2.90	0.64	-.76
Dress	3.62	1.39	3.77	0.89	-.51
Vocal Attractiveness	2.99	0.55	3.03	0.59	-.24

Males, N=32; Females, N=28.

\*  $p \leq .05$

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#### Intercorrelations of individual nonverbal cues

Although nonverbal behavior does not seem to differ according to the sex of the interviewee, intercorrelations between individual nonverbal cues did differ by sex. Intercorrelations of individual nonverbal cue variables for men and women are displayed in Table 4.5.

Strong intercorrelations between back/side lean and parallel body orientation were found for both sexes, but other significant correlations differed by sex. For men, gaze was significantly related to back/side lean, and physical and vocal attractiveness were significantly related to each other. For women, significant correlations included gaze with hand movement, gaze with dress (negatively), and smiling with parallel body orientation. These different intercorrelations imply that, while individual cues do not differ according to the sex of the interviewee, sex does play

a role in the relationship, and possibly co-occurrence, of behaviors.

Table 4.5. Intercorrelations between individual nonverbal cue variables by sex of interviewee.

Nonverbal Cues	1	2	3	4	5	6	7	8
1. Gaze		.28	.39*	.04	.27	.31	-.51**	.13
2. Smile	.01		-.02	.03	.24	.31	-.18	.06
3. Hand Movement	-.12	.06		-.12	.23	.13	-.29	.03
4. Back/Side Lean	.39*	.09	-.15		.40*	-.19	.13	.13
5. Parallel Body Orientation	.31	-.05	.19	.45**		-.14	.11	.06
6. Physical Attractiveness	.21	.10	.04	-.07	.10		-.15	-.20
7. Dress	-.22	.04	-.13	-.20	-.30	.00		-.25
8. Vocal Attractiveness	-.11	.04	-.10	.01	-.15	.34*	.16	

For males (N=32)

\*  $p \leq .05$ , \*\*  $p \leq .01$  (two-tailed).

For females (N=28)

\*  $p \leq .05$ , \*\*  $p \leq .01$  (two-tailed).

Note: Correlations for male interviewees appear below the diagonal, and correlations for female interviewees appear above the diagonal.

#### Correlations of the Total Nonverbal Cue Variable with Interview and Performance Ratings

Correlations of the total nonverbal cue variable with interview and performance ratings were computed separately

for male and female interviewees. For men, nonverbal cues correlated significantly with interview ratings ( $r=.30$ ,  $p\leq.05$ ,  $N=32$ ), but not with performance ( $r=-.18$ , n.s.). For women, nonverbal cues were associated with both interview ratings ( $r=.39$ ,  $p\leq.05$ ,  $N=28$ ) and performance ( $r=.67$ ,  $p\leq.001$ ,  $N=28$ ). The correlation coefficients of nonverbal cues with performance were significantly different between men and women ( $z=-3.11$ ,  $p\leq.001$ ). These results indicate that nonverbal cues influence interview ratings for both male and female interviewees, but nonverbal cues are related to performance only for women. In order to better understand these results, categorical and individual cues were correlated with interview and performance ratings for male and female interviewees.

#### Correlations of Categorical and Individual Nonverbal Cues with Interview and Performance Ratings

First, dynamic and static cues were correlated with interview and performance ratings separately for men and women using a one-tailed test. These results are displayed in Table 4.6. Because a one-tailed test was used, negative correlations can not be interpreted.

For men, neither of the categorical nonverbal cue variables were significantly related to interview ratings. Dynamic cues were negatively correlated with performance. For women, dynamic cues were significantly associated with

both interview ratings and performance. Static cues also correlated significantly with performance for women.

Next, individual nonverbal cues were correlated with interview and performance ratings, separately for men and women. These results are also reported in Table 4.6.

Table 4.6. Correlations of interview and performance scores with categorical and individual nonverbal cue variables for male and female interviewees.

Nonverbal Cues	Males		Females	
	Intvw.	Perf.	Intvw.	Perf.
Dynamic Cues	.18	-.34	.31*	.56***
Static Cues	.18	.05	.11	.37*
Gaze	.30*	.08	.08	.35*
Smile	-.03	-.20	.21	.34*
Hand Movement	-.06	-.46	.24	.33*
Back/Side Lean	-.01	.06	-.10	-.39
Parallel Body Orientation	.14	-.06	.22	.10
Physical Attractiveness	.28 <sup>†</sup>	.05	.08	.40*
Dress	-.00	.03	.06	.02
Vocal Attractiveness	.22	.09	.21	.11

Males N=32, Females N=28

\*  $p \leq .05$ , \*\*\*  $p \leq .001$  (one-tailed).

For men, gaze was significantly correlated with interview score, and physical attractiveness was marginally related ( $p=.06$ ). For women, none of the individual nonverbal

cues correlated with interview ratings. However, several nonverbal cues correlated significantly with performance for women, including: gaze, smile, hand movement, and physical attractiveness. Back/side lean correlated in an unexpected negative direction with performance for women.

#### The Incremental Validity of Interview Scores and Nonverbal Cues

Before assessing incremental validity the correlation between interview ratings and performance was computed separately for men and women. For men, the correlation between interview ratings and performance was .26 ( $p=.07$ ), and for women it was .46 ( $p\leq.01$ ). The interview is valid for women, but because of the small sample sizes and reduced statistical power, the validity of the interview for men can not be ruled out.

The test of the incremental validity of interview ratings and nonverbal cues for men and women was conducted in two steps. First, the regression model with only interview scores was compared to the model with interview scores and the total nonverbal cue variable. Second, the regression model that included only the total of nonverbal cues was compared to the model with both nonverbal cues and interview scores.

Significance is achieved if R-squared in the model with both interview score and nonverbal cues is significantly



greater than either one alone. The test for significance is an F-test. The change in R-squared and the values of the test for significance of that change are presented in Table 4.7.

The incremental validity of the nonverbal cues differed according to sex. For men, nonverbal cues did not add significantly to the variance after interview ratings were in the regression equation. For women, however, when nonverbal cues were entered, variance was significantly increased beyond that explained by interview ratings alone.

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Table 4.7. Regression analysis of the incremental validity of nonverbal cues for male and female interviewees.

Dependent variable = Performance Score

Incremental Validity of Nonverbal Cues

	<u>Males</u>		<u>Females</u>	
<u>Independent Variables</u>	<u><math>\Delta R^2</math></u>	<u>F</u>	<u><math>\Delta R^2</math></u>	<u>F</u>
Interview Score	.07		.21	
Nonverbal Cues	.08	2.73	.29	14.50***

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Incremental Validity of Interview Scores

	<u>Males</u>		<u>Females</u>	
<u>Independent Variables</u>	<u><math>\Delta R^2</math></u>	<u>F</u>	<u><math>\Delta R^2</math></u>	<u>F</u>
Nonverbal Cues	.03		.45	
Interview Score	.12	4.09	.05	2.50

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For males, N=32; for females, N=28.

\*  $p \leq .05$ , \*\*  $p \leq .01$  \*\*\*  $p \leq .001$ .

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The incremental validity of interview scores did not differ by sex. For both men and women interviewees, the

inclusion of interview ratings as predictors of performance did not explain significantly more variance than of nonverbal cues alone.

#### Summary of Results for Male and Female Interviewees

Nonverbal cues were utilized by raters of the interviews for both male and female interviewees. The relation between nonverbal cues and performance does, however, differ significantly by sex. Nonverbal cues were strongly related to performance ratings for women, but not for men. The incremental validity of nonverbal cues also differed by the sex of the interviewee. For women only, nonverbal cues added significantly to the prediction of performance, beyond that of interview ratings alone. It must be noted that these results should be interpreted with caution given the low sample sizes by sex (males=32 and females=28) and the associated loss of statistical power.

## DISCUSSION AND CONCLUSIONS

### Cue Utilization and the Ecological Validity of Nonverbal Cues

Consistent with several other studies, it was found, in this study, that interview ratings were favorably influenced by information provided by interviewees' nonverbal behavior. Interviewees' who were more nonverbally expressive were rated more favorably in the interview. These results clearly show that nonverbal cues are attended to and utilized by raters in a structured selection interview.

A more unique outcome of this study was that nonverbal cues were related to performance ratings. This result is contrary to the prevailing belief that nonverbal cues are merely invalid distractions and noise that should be ignored in the selection interview. It is consistent, however, with results reported by Motowidlo and Burnett (1992) and Ambady and Rosenthal (1993). Motowidlo and Burnett (1992) found that ratings based only on visual cues were significantly correlated with supervisory ratings of performance. Ambady and Rosenthal (1993) similarly reported that ratings of nonverbal cues were significantly correlated with ratings of teacher effectiveness. Thus, it may be inferred that important and relevant information about an interviewees'

potential to perform well on the job may be communicated through interviewees' nonverbal behavior.

This interpretation suggests that supervisors who rated incumbents' job performance correctly interpreted nonverbal behaviors exhibited on the job as valid indicators of management effectiveness. This explanation is based on the assumption that nonverbal behaviors reflect underlying traits, and that supervisors are able to infer those traits from their interactions with incumbents. Accordingly, the correlation between nonverbal cues and performance ratings can be explained by their relation to the same relevant traits.

An alternative explanation is that supervisors may be erroneously interpreting nonverbal cues exhibited on the job as indicators of management effectiveness. This alternative explanation rests on the assumption that nonverbal cues do not reflect underlying traits, or that the underlying traits they do represent are not truly related to job performance. This interpretation is more difficult to defend given the extensive literature on the accuracy with which personality traits can be judged by others based on targets' nonverbal behavior (Ambady and Rosenthal, 1993; Borkenau, 1992; Borkenau and Liebler, 1992; Kenny et al., 1992; Funder and Dobroth, 1987; Paunonen, 1989).

Recent studies support this first explanation, that judges are quite accurate at assessing personality traits from nonverbal cues (Ambady and Rosenthal, 1993; Borkenau and

Liebler, 1992, Kenny et al., 1992). Not only has support been found for the accuracy of personality judgments by strangers at, what is called, "zero acquaintance" (Albright et al., 1988, Kenny et al., 1992), but also the accuracy of personality judgments varies positively with the degree of acquaintance between the judge and the target (Funder and Colvin, 1988; Paunonen, 1989). In this study, incumbents had been on their current job, with their current supervisor, for at least six months. Thus, it would seem reasonable that supervisors, who had a substantial degree of contact with interviewees (i.e. incumbents), would be able to make accurate judgments of their personality. If personality traits were accurately assessed by supervisors as indicators of performance, and those traits are, in turn, reflected in nonverbal behaviors, then it seems appropriate to use nonverbal behaviors to predict job performance.

At the molecular level of analysis, the only nonverbal cue that was associated substantially with both interview ratings and supervisors ratings was gaze. It should be noted that gaze was the least reliably rated dynamic nonverbal cue (.64). Therefore, this finding is even more surprising.

Gaze is often interpreted as a signal of dominance, attentiveness, persuasiveness, credibility, or trustworthiness (Kleinke, 1986). These traits may be considered desirable for an effective manager. These presumptions about personality characteristics are, however,

speculative in the absence of any actual personality assessment.

### Incremental Validity

Although nonverbal cues were related to performance, the tests for incremental validity indicated that interview ratings alone were the best predictors of performance. Independent information about nonverbal cues did not contribute to the prediction of performance ratings beyond that of interview ratings alone. Since raters were utilizing nonverbal cues then it is possible that the information provided by nonverbal cues was sufficiently incorporated into interview ratings. Thus, independent ratings of nonverbal cues would not add significantly to the information already included in those interview ratings.

Furthermore, interview ratings contributed incrementally to the prediction of performance beyond that of nonverbal cues alone. Even if raters attended to and utilized nonverbal cues, other information, not provided by nonverbal cues, but utilized by raters, could contribute to validity. Raters had access to both nonverbal information and interviewees' verbal responses. Any unique, relevant information provided by interviewees in their responses to interview questions was most likely used by interview raters. The utilization of unique information, not provided by



nonverbal cues, would explain why interview ratings increased validity beyond that of nonverbal cues alone.

### Sex Differences

Analyses by sex were exploratory in nature. Low sample sizes by sex and the loss of power which is associated with small samples make it necessary to interpret these results with caution. However, the compellingness of these results lead to an attempt to explain the sex differences.

It was found that the effect of nonverbal cues differed according to the sex of the interviewee. Nonverbal cues influenced interview ratings separately for both men and women, but the ecological validity of nonverbal cues for women was significantly different than the ecological validity of cues for men. For men, the relation between nonverbal cues and performance ratings was nonsignificant and in an unexpected direction. But for women, nonverbal cues were positively and strongly associated with ratings of performance.

On a microscopic level, no single cue, such as gaze in the total sample, was both utilized by interview raters and was related to performance. But, for women, dynamic cues together (gaze, smiling, hand movements, and parallel body orientation) were utilized by interview raters and were also significantly related to supervisory ratings of performance.

For women, nonverbal cues alone were valid predictors of performance, and contributed significant incremental validity beyond that of interview ratings. Interview raters were utilizing nonverbal cues, but this outcome indicates that when rating female interviewees they did not utilize nonverbal cues as efficiently as possible.

Three possible explanations of the differences in the ecological validity of cues for men and women will be presented. One possibility is that men and women actually differ in the nonverbal behaviors they display. A second possibility is that interpretations of nonverbal behavior differ according to whether the target is male or female. A third possibility is that men and women differ in the accuracy with which they encode relevant information that is then, in turn, interpreted by others from observing their nonverbal behavior.

The first explanation suggests that men and women behave differently. The evidence in this study does not support this explanation. Nonverbal cues as a whole did not differ by sex, and the only difference in individual cues was found for parallel body orientation. Other researchers have reported that females interact more directly with others than do males, particularly in same-sex dyads (see Hall, 1984). Since the interviewer in this study was female, then female interviewees may have been more likely to orient themselves directly toward her. However, this single difference is not sufficient to support the explanation that the differing

results for men and women interviewees occurred because they actually behave different nonverbally.

A second possible explanation is that the same behaviors are interpreted differently for men than for women. For example, although gaze did not differ by sex in this study, it has been reported by other researchers that women gaze at others more than men do (Hall, 1984). Interpretations of women's gazing patterns are complicated by the fact that gaze connotes degrees of dominance and status as well as degrees of affiliation, openness, and dependence (Kleinke, 1986; Mehrabian, 1972; Nevill, 1974; Thayer, 1969). These apparent contradictions may come into play in sex-stereotypic ways (Henley, 1977). The choice of interpretation is left to the person judging that behavior. If the judge follows a sex-stereotypic interpretation, more gazing by women would be interpreted as a signal of dependence, and more gazing by men, a signal of dominance.

In this study, interview raters and supervisors may have been applying different interpretations to the same behaviors exhibited by male and female incumbents. This is evidenced by the fact that the direction of the effect of nonverbal behaviors on performance ratings differed by sex. At the microscopic level, the direction of the relation of some individual cues with interview and performance ratings also differed by sex (i.e. smiling, hand movements, dress, and dynamic cues as a whole). But, no significant sex differences existed for performance ratings. There is no

clear evidence to support, or rule out this explanation at this time.

A third possible explanation for the sex differences in this study suggests that men and women differ in their ability to accurately encode, or exhibit, traits or emotions through their nonverbal behavior. There is strong and prevailing evidence that women are better encoders of nonverbal cues, than are men (see review by Hall, 1984). Female interviewees/incumbents may display nonverbal behaviors on the job that are accurately assessed by supervisors. Nonverbal cues displayed by men, on the other hand, may be misinterpreted because men are not, in general, as skilled at encoding their traits and emotions. Nonverbal cues may even act as distracters, or noise, when assessing male interviewees/incumbents.

Results reported by Motowidlo and Burnett (1992) provide support for this third explanation. They correlated interview and performance ratings separately by the sex of the interviewee. Validity was greatest for men when interview raters only had access to aural information, and validity was greatest for women when visual cues were available to raters, either with or without aural information. These results imply that men and women may differ in their ability to convey information through verbal or nonverbal channels. When visual information was removed for men the raters focused solely on verbal content and were able to make valid ratings.

The latter two explanations for sex differences both address the issue of communication of traits through nonverbal behavior and the eventual interpretation of those traits. Whether the source of variance lies with the male and female subjects, or with the receivers of those cues can not be determined at this time.

### Contributions and Limitations of Study

#### Contributions

This study addressed three concerns related to the research to-date on nonverbal behavior. The first concern was that the validity of nonverbal cues had not been sufficiently addressed. Although Ambady and Rosenthal (1993) made a significant contribution in this regard by utilizing an ecologically valid criterion of teacher effectiveness, their study did not have specific implications for selection interviewing. This current study, however, was not only conducted within the context of a structured selection interview, but also supervisory ratings of performance, the standard criterion for validation studies, were collected.

A second concern that was addressed by this study regarded the careful definition and microscopic level measurement of nonverbal cues. The choice of eight cues for this study was justified according to their implied relationship with important underlying traits (preliminary

study #3). Next, the eight cues were operationally defined in objective, behavioral terms on a microscopic level. This methodological difference enabled the investigation of cues together, as a meaningful whole, and individually at a molecular level.

Finally, dynamic nonverbal cues were measured by independent judges using very objective means, and static and paralinguistic cues were measured by different judges using 5-point rating scales. Therefore, the measurement of nonverbal cues was not contaminated by the interview ratings or performance ratings.

### Limitations

One potential limitation of this study is that performance ratings were made by supervisors who may be subject to the same interpretive errors as interview raters. The "criterion problem", as it is called, is too complex to be addressed here (see Austin and Villanova, 1992). It is acknowledged that since both interview and performance scores were made by human raters those ratings may share the same systematic error variance.

Another possible limitation of this study is that university students served as raters of the interviews rather than experienced interviewers. Bernstein, Hakel, and Harlan (1975), however, compared the decision processes of interviewers and college students in an interview situation.



These researchers determined that although student raters tended to be more lenient no other important differences existed. In addition, in this study student raters reported that they were, on average, considerably concerned about the accuracy of their ratings. The use of student raters was sufficient for the purposes of this study, but it is suggested that experienced interviewers also be used as raters in order to determine the generalizability of these results.

A third limitation of this study is that the verbal content of interviewees' answers to the structured interview questions was not independently measured. If the content of interviewees' answers was collected, either in the form of written transcripts, which would remove all nonverbal behavior from consideration, or in the form of interview ratings based only on hearing interviewees responses, which would remove only visually-based cues, then the incremental validity of verbal and nonverbal information could be determined.

### Summary and Conclusions

Nonverbal cues are utilized by interview raters and are also related to performance. More interestingly, of the individual cues, gaze was the only valid cue which was utilized by interview raters. Nonverbal cues alone were not, however, sufficient predictors of performance, and did not

add to validity beyond that already accounted for by interview ratings. This suggests that interview raters were efficiently utilizing information provided by nonverbal cues, but that nonverbal cues were not the only source of information used to predict performance.

Furthermore, the sex of the interviewee seems to play an important role in the validity of nonverbal cues. It is premature, however, to formulate any specific guidelines for handling these sex differences. We still have a great deal to learn about the display, meaning and interpretation of male and female behavior on the job and in the selection interview.

This research study has focused on whether nonverbal cues influence interview ratings and whether or not those cues are valid. The results of this study provide compelling and intriguing evidence of the importance and validity of nonverbal cues in the structured selection interview.

APPENDIX A  
INTERVIEW PROTOCOL AND INTERVIEW DIMENSIONS

## INSTRUCTIONS FOR THE INTERVIEWER

When the interviewee enters the room introduce yourself and ask them to have a seat.

Next, use the following points to introduce the project and the purpose of the study:

"Let me take a moment to tell you about the project, and how your participation will help us:

### Overview:

My colleagues and I at UF have developed some experimental interview questions.

We will use these questions in interviews with 200 people across several companies.

All interviews will be videotaped to use for later research.

Supervisors of each person interviewed will be contacted and asked to comment on how their employee responds in general job situations.

### How the videotapes will be used:

Videotaped interviews will be used as part of a program of research at UF over the next several years.

Basically, students will watch the tapes, and the information gathered will help us to suggest ways to improve the interview process.

The emphasis of these studies will be on student observers' reactions and decisions, not on you, the interviewee.

### Confidentiality:

Since this is an independent project by the Univ. of Florida, information collected will not be part of your personnel record, nor will it affect your job/career in any way.

Information from the interview and from supervisors will not be seen by anyone who is in your company.

Only aggregated, or combined, data will be reported to the company. Individual information cannot be distinguished.

Videotapes will not be used for any purpose other than for research.

What we are asking from them:

As you answer the interview questions, treat this as a real job interview.

You may imagine that you are interviewing for your current job all over again.

I still want you to provide real, truthful answers.

Do you have any questions or concerns?

I will turn the videocamera on now....."

With the videocamera on, follow this script:

"Now, I am going to ask you 8 main questions.

For some questions you must use your own past experiences, and tell me what you did when you were in those situations. Try to use experiences you had before you took your current job.

For other questions I will present you with a hypothetical situation. I will ask you to tell me what you would do if you were in that situation

I will ask four questions of each type, beginning with the ones referring to a past experience/hypothetical situation.

There are no right or wrong answers to these questions. Just try to be as specific as you can.

Are you ready to begin?"

Begin asking the interview questions (See attachment).

Past-oriented Questions:

When answering the first few questions I would like you to think of specific experiences you have had in the past.

(1P) First, I'd like you to think of a time when you were working with other people, either on a special project or on an everyday task, when there was some type of crisis, and it was necessary for someone to take charge. What was your role in this situation? (Leadership)

(2P) When we work in groups there are usually many important decisions to make. Tell me about a time when you were part of a group that had an important decision to make and you held a position regarding that decision, but you were outnumbered by other members of the group who held a position different from yours. (Teamwork)



(3P) Next, I'd like you to tell me about a time when you were working on an important task but a major obstacle or disruption got in the way, and forced you to think about whether or not to continue as you had originally planned.  
(Drive)

(4P) Now let's focus on situations where the decisions were mainly your own, rather than as part of a group. Think about an important decision you had to make that was especially complex or challenging. I am really interested in the process used, or approach you took, to reach that decision.  
(Planning & Organizing)

Future-oriented Questions:

When answering the remaining questions you should imagine you are a newly hired manager with a large company.

(1F) I'd like you to imagine that your supervisor has asked you to join an established task force to fill a vacancy left by another manager who recently resigned. You have an interest in the project they are working on and you agree to at least sit in on a meeting this afternoon. Thirty minutes into the meeting you feel that the program the task force is ready to implement is inadequate and will have many problems. What would you do? (Leadership)

(2F) Picture yourself as a department manager working on an important report with two other managers who are from different departments. Your supervisor, who by the way is not the supervisor of the other two managers, offers to look over the report before you present it to senior management. You give her a draft to review. She returns it with many serious criticisms, all on areas of the report that the other managers prepared. What would you do? (Teamwork)

(3F) Imagine that your supervisor asks you to take over a group project because the project leader was transferred. You find out that the project is behind schedule because the former project leader mishandled some early steps. As a result, it will be extremely difficult for the group to complete the project by the deadline in three weeks. What would you do? (Drive)

(4F) Now I'd like you to imagine that you are offered an opportunity to transfer to a position in another division of the company for which you work. This would be a lateral move, instead of a promotion, and you would also have to move to another city. How would you go about deciding whether or not to accept this transfer? (Planning & Organizing)

After you have asked all 8 interview questions, use the following script:

"That is the end of the interview. I would like to take just a couple more minutes to ask you some follow-up questions.

First, now that you have heard the interview questions and your own responses, can we have your permission to use the videotape of your interview for research purposes?

Yes

No

Also, as I mentioned, as part of the project we will be contacting the supervisors of every one who is interviewed, to ask them how you respond in general job situations. The questions for your supervisor are different from, but directly related to the interview questions I have just asked you.

Again, let me emphasize that your supervisor will not have any access to your individual answers from this interview, and in turn, his/her comments will not be shared with or available to anyone who is in the company.

In order to contact them, we will need your supervisor's name...

---

And what is his/her job title?

---

And what is your current job title?

---

Could you give me a brief description of what you do on your job?

---



---



---



---

How long have you been in your current position?  
\_\_\_\_\_

How long have you been with this company? \_\_\_\_\_

Could you please tell me your age? \_\_\_\_\_

Finally, as you know, I used two types of questions in this interview.

Which type do you think applicants would prefer?

Past	Hypo	Both	None
------	------	------	------

Which type seemed more relevant to your job?

Past	Hypo	Both	None
------	------	------	------

This all the information I need. Do you have any questions for me?

Thank you so very much for participating in this project."

---

Stand up, shake hands, and see them to the door.

Turn off the videocamera. Change tapes if necessary.

Record demographic information below.

Make ratings.

Prepare for next interview.

---

Demographic Information:

Sex:     M           F

Age:     \_\_\_\_\_

Race:           Asian        Black        Hispanic    White        Other

Job Tenure:     0-6mo.     7-12mo.    13-18mo.   19-24mo.   25-  
30mo.Organization  
Tenure:         0-6mo.     7-12mo.    13-18mo.   19-24mo.   25-  
30mo.

---

INTERVIEWEE # \_\_\_\_\_ COMPANY \_\_\_\_\_ DATE  
\_\_\_\_\_

CURRENT JOB TITLE:

---

SUPERVISOR INFORMATION:

---

Name

---

Job Title



## LEADERSHIP

Seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and assessing their performance/behavior; persuading others to accept own ideas and exhibiting confidence in those ideas; showing initiative; taking charge.

		Seeks or volunteers for leadership roles in groups.
7		Provides accurate and constructive feedback to others resulting in improved performance.
	HIGH	
		Consistently accomplishes goals through others.
6		Confidently and forcefully persuades others to accept own views and ideas.
<hr/>		
		Takes on leadership roles and responsibilities when offered.
5		Attempts to motivate others by providing feedback and encouragement.
4	MODERATE	May recognize, but not always take advantage of, opportunities to accomplish tasks through others.
3		Expresses own ideas and views to others and attempts to persuade them to accept the same opinions.
<hr/>		
		Avoids or declines opportunities for leadership.
2		Does not motivate or encourage others to exert more effort toward task accomplishment, or give feedback to others about performance.
	LOW	
		Does not utilize opportunities to accomplish goals through others.
1		Does not try to express own views and opinions to others.

## TEAMWORK

Emphasizing and showing concern for group interests; cooperating with others and working to form harmonious workgroups; prioritizing group interests above individual interests; helping and listening to others and showing consideration for their needs and feelings.

- |   |      |   |
|---|------|---|
|   |      | Cooperates enthusiastically with others to accomplish group objectives.                   |
| 7 |      | Takes full advantage of useful direction and leadership from others.                      |
|   | HIGH | Puts group interests first.   |
| 6 |      | Sacrifices personal convenience to assist others when appropriate.                        |
|   |      | Solicits suggestions from others and integrates them into effective compromise solutions. |
- 
- |   |          |   |
|---|----------|---|
|   |          | Cooperates with others when useful for accomplishment of group objectives.            |
| 5 |          | Accepts useful direction from others.   |
| 4 | MODERATE | Generally shows consideration for others and offers to assist others when convenient. |
| 3 |          | Recognizes alternative viewpoints and accepts compromise solutions when offered.      |
- 
- |   |     |  |
|---|-----|--|
|   |     | Unwilling to cooperate with others.  |
|   |     | Rejects direction from others.   |
| 2 |     | Focuses on own individual objectives instead of group or organizational objectives.          |
|   | LOW |  |
| 1 |     | Reluctant to go out of own way to help or show consideration for others.                     |
|   |     | Refuses to compromise when presented with other's suggestions or ideas, even when necessary. |

## DRIVE

Showing concern for task achievement; persisting to solve problems and overcome obstacles to task accomplishment; doing extra work and focusing high energy levels to solve problem or meet difficult deadline; volunteering to handle assignments or problems outside own area of responsibility.

Actively seeks and volunteers for challenging assignments.

- 7 Puts in time and effort above and beyond the call of duty.

HIGH Always focuses attention on business at hand.

- 6 Works hard even when faced with difficult or demanding tasks.

Volunteers for tasks even when not strictly in own area of responsibility.

- 
- 5 Accepts challenging assignments or tasks when given to him/her.

Shows concern for achievement of tasks by attempting to meet deadlines with reasonable concern for quality.

- 4 MODERATE Refocuses attention on business at hand after distractions.

- 3 May become side-tracked by obstacles or delays, but works to overcome them.

Accepts assignments even when not strictly in own area of responsibility.

---

Avoids or declines assignments which are difficult or challenging.

- 2 Shows little dedication to work and a reluctance to put in extra time or energy to accomplish assignments in a timely fashion.

LOW Easily distracted from business at hand.

- 1 Avoids, ignores or procrastinates with obstacles or special problems.

Refuses to take on problems or tasks when not strictly in own area of responsibility.

## PLANNING AND ORGANIZING

Adopting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to detail; generating and evaluating alternative solutions thoroughly; anticipating obstacles and developing plans to meet them; setting appropriate priorities.

7	HIGH	Seeks and gathers as much relevant information as possible for addressing all aspects of a problem or decision by efficiently utilizing all available resources.
		Effectively structures even ambiguous or complex situations.
		Anticipates obstacles and always develops flexible plans to accommodate contingencies.
6		Takes time to prioritize problems and decisions appropriately and successfully.
<hr/>		
5		Seeks and gathers enough information needed to address most aspects of a problem or decision by using most of the available resources.
4	MODERATE	Approaches most problems or decisions in an organized fashion.
3		Anticipates obstacles and usually develops plans to address delays and distractions.
		Generally sets priorities for problem solving and decision-making.
<hr/>		
2		Overlooks key aspects of a problem or decision and does not use available resources efficiently for obtaining additional information needed.
	LOW	Takes haphazard approach to problem-solving and decision-making.
		Fails to anticipate obstacles or develop plans to handle contingencies.
1		Fails to prioritize problems or decisions appropriately.

APPENDIX B  
SUPERVISORY RATING FORMS

Instructions for Supervisors:

Your company has been cooperating with our researchers from the University of Florida who are conducting a research project which investigates the effectiveness of the structured interview. Several entry-level employees in your company have allowed us to interview them on videotape as part of this study. These videotaped interviews will be used as part of a program of research on interviewing at the University of Florida over the next several years. The collection of these videotaped interviews provides several research possibilities which may have significant implications for interview programs now in place, and for interviewing, in general.

The person whose name is at the bottom of the following page is one of those persons who participated in this interview project. We understand that he or she is someone who reports to you. They have given us their permission to ask you, their supervisor, for information about their behavior in job-related situations.

We are asking you to help by describing this person's job performance using the attached form.

This information is being collected for research purposes only. It should not be used in any way that might help or hurt the career of the employee involved. Accordingly, it should not become part of this individual's permanent personnel record.

This questionnaire contains four broad categories of performance. They are named and defined below:



Leadership

Seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and assessing their performance/behavior; persuading others to accept own ideas and exhibiting confidence in those ideas; showing initiative; taking charge.

Teamwork

Emphasizing and showing concern for group interests; cooperating with others and working to form harmonious work groups; prioritizing group interests above individual interests; helping and listening to others and showing consideration for their needs and feelings.

Drive

Showing concern for task achievement; persisting to solve problems and overcome obstacles to task accomplishment; doing extra work and focusing high energy levels to solve a problem or meet a difficult deadline; volunteering to handle assignments or problems outside own area of responsibility.

Planning and Organizing

Adopting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to detail; generating and evaluating alternative solutions thoroughly; anticipating obstacles and developing plans to meet them; setting appropriate priorities.

Rating scales for these performance categories appear on the following pages, one per page. Notice that the performance category is defined at the top of the page. Running down the left side of the page is a 7-point scale broken into three ranges with 7 and 6 at the HIGH range, 5, 4, and 3 at the MODERATE range, and 2 and 1 at the LOW range. Each range is defined with a description of what a person would have to do to deserve a rating in that range of HIGH, MODERATE, or LOW. At the bottom of the page is another scale to indicate how important the performance category is for the job of the person who is being rated.

Please follow these five steps for making ratings on each performance category:

First, carefully read the definition of the performance category at the top of the page.



Second, read the descriptions of behaviors for the three ranges of performance.

Third, decide which of the three descriptions (High, Moderate, Low) best fits the person you are rating.

Fourth, circle one number within that range that best represents the performance of the person you are rating.

Fifth, circle one number at the bottom of the page to indicate how important this performance category is for the job of the person you are rating.

After you have done this for the four performance categories, rate the person's Overall Job Performance on the last page of this questionnaire by circling one number that appears on that scale.

Thank you very much for your help and cooperation.

The employee named below has participated in the interview project, and is aware that you have been asked to make the following ratings.

Employee's name:

---

Leadership

Seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and assessing their performance/behavior; persuading others to accept own ideas and exhibiting confidence in those ideas; showing initiative; taking charge.

- |   |          |   |
|---|----------|---|
| 7 |          | Seeks or volunteers for leadership roles in groups; provides accurate and constructive feedback to others resulting in improved performance; consistently accomplishes goals through others; confidently and forcefully persuades others to accept own views and ideas.   |
|   | HIGH     |   |
| 6 |          |   |
| 5 |          | Takes on leadership roles and responsibilities when offered; attempts to motivate others by providing feedback and encouragement; may recognize, but not always take advantage of, opportunities to accomplish tasks through others; expresses own ideas and views to others and attempts to persuade them to accept the same opinions. |
| 4 | MODERATE |   |
| 3 |          |   |
| 2 |          | Avoids or declines opportunities for leadership; does not motivate or encourage others to exert more effort toward task accomplishment, or give feedback to others about performance; does not utilize opportunities to accomplish goals through others; does not try to express own views and opinions to others.                      |
|   | LOW      |   |
| 1 |          |   |

How important is this performance dimension for the job of the person you are rating? (circle one number below)

- |   |                      |
|---|----------------------|
| 0 | Not at all important |
| 1 | Minor importance     |
| 2 | Some importance      |
| 3 | Important            |
| 4 | Very important       |
| 5 | Extremely important  |

Teamwork

Emphasizing and showing concern for group interests; cooperating with others and working to form harmonious work groups; prioritizing group interests above individual interests; helping and listening to others and showing consideration for their needs and feelings.

- |   |          |   |
|---|----------|---|
| 7 |          | Cooperates enthusiastically with others to accomplish group objectives; takes full advantage of useful direction and leadership from others; puts group interests first; sacrifices personal convenience to assist others when appropriate; solicits suggestions from others and integrates them into effective compromise solutions. |
|   | HIGH     |   |
| 6 |          |   |
| 5 |          | Cooperates with others when useful for accomplishment of group objectives; accepts useful direction from others; generally shows consideration for others and offers to assist others when convenient; recognizes alternative viewpoints and accepts compromise solutions when offered.   |
| 4 | MODERATE |   |
| 3 |          |   |
| 2 |          | Unwilling to cooperate with others; rejects direction from others; focuses on own individual objectives instead of group or organizational objectives; reluctant to go out of own way to help or show consideration for others; refuses to compromise when presented with others' suggestions or ideas, even when necessary.          |
|   | LOW      |   |
| 1 |          |   |

How important is this performance dimension for the job of the person you are rating? (circle one number below)

- |   |                      |
|---|----------------------|
| 0 | Not at all important |
| 1 | Minor importance     |
| 2 | Some importance      |
| 3 | Important            |
| 4 | Very important       |
| 5 | Extremely important  |

Drive

Showing concern for task achievement; persisting to solve problems and overcome obstacles to task accomplishment; doing extra work and focusing high energy levels to solve problem or meet difficult deadline; volunteering to handle assignments or problems outside own area of responsibility.

- |      |          |  |
|------|----------|--|
| 7    |          | Actively seeks and volunteers for challenging assignments; puts in time and effort above and beyond the call of duty; always focuses attention on business at hand; works hard even when faced with difficult or demanding tasks; volunteers for tasks even when not strictly in own area of responsibility.   |
| HIGH |          |  |
| 6    |          |  |
| 5    |          | Accepts challenging assignments or tasks when given to him/her shows concern for achievement of tasks by attempting to meet deadlines with reasonable concern for quality performance;   |
| 4    | MODERATE | refocuses attention on business at hand after distractions; may become side-tracked by obstacles or delays, but works to overcome them; accepts assignments even when not strictly in own area of responsibility.  |
| 3    |          |  |
| 2    |          | Avoids or declines assignments which are difficult or challenging; shows little dedication to work and a reluctance to put in extra time or energy to accomplish assignments in a timely fashion; easily distracted from business at hand; avoids, ignores or procrastinates with obstacles or special problems; refuses to take on problems or tasks when not strictly in own area of responsibility. |
| LOW  |          |  |
| 1    |          |  |

How important is this performance dimension for the job of the person you are rating? (circle one number below)

- |   |                      |
|---|----------------------|
| 0 | Not at all important |
| 1 | Minor importance     |
| 2 | Some importance      |
| 3 | Important            |
| 4 | Very important       |
| 5 | Extremely important  |

Planning and Organizing

Adopting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to detail; generating and evaluating alternative solutions thoroughly; anticipating obstacles and developing plans to meet them; setting appropriate priorities.

- |   |          |   |
|---|----------|---|
| 7 |          | Seeks and gathers as much relevant information as possible for addressing all aspects of a problem or decision by efficiently utilizing all available resources; effectively structures even ambiguous or complex situations; |
|   | HIGH     | anticipates obstacles and always develops flexible plans to accommodate contingencies;  |
| 6 |          | takes time to prioritize problems and decisions appropriately and successfully.   |
| 5 |          | Seeks and gathers enough information needed to address most aspects of a problem or decision by using most of the available resources;  |
| 4 | MODERATE | approaches most problems or decisions in an organized fashion; anticipates obstacles and usually develops plans to address delays and distractions; generally sets priorities for problem-solving and decision-making.        |
| 3 |          |   |
| 2 |          | Overlooks key aspects of problems or decisions and does not use available resources efficiently for obtaining additional information needed;  |
|   | LOW      | takes haphazard approach to problem-solving and decision-making; fails to anticipate obstacles or develop plans to handle contingencies;  |
| 1 |          | fails to prioritize problems or decisions appropriately.  |

How important is this performance dimension for the job of the person you are rating? (circle one number below)

- 0 Not at all important
- 1 Minor importance
- 2 Some importance
- 3 Important
- 4 Very important
- 5 Extremely important

Overall Job Performance

7		
	HIGH	Performs job well in all or almost all areas; exceeds standards and expectations for adequate job performance.
6		
5		
4	MODERATE	Performs adequately in important areas of the job; meets standards and expectations for adequate job performance.
3		
2		
	LOW	Performs poorly in important areas of the job; does not meet standards and expectations for adequate job performance.
1		



APPENDIX C  
TRAITS ASSOCIATED WITH BEHAVIORAL DIMENSIONS

RATERS INSTRUCTIONS:

Please read each definition of the behavioral dimensions. These definitions represent the high end of the scale. In other words, a person rated high on that dimension would be described in these terms.

Please circle the number (1 to 5) corresponding to whether or not you think a person described similarly on that dimension would also be described as possessing each of the traits listed. The scale corresponds with the degree of the relationship you think exists between the dimension and each trait, NOT how high you think the trait would be if the individual is rated high on that dimension.

For example, on the dimension of leadership and the trait of neurotic:

- 5= Yes, I definitely think someone rated high on leadership would also be neurotic.
- 3= I think that someone rated high on leadership could possibly be neurotic.
- 1= No, I do not think someone rated high on leadership could be neurotic at all.

Thank you for your help.

Someone who is rated high on Leadership exhibits behaviors such as: seeking and volunteering for leadership roles in groups; providing accurate and constructive feedback to others resulting in improved performance; consistently accomplishing goals through others; tactfully persuading others to accept own views and ideas; showing initiative; and taking charge.

Someone rated high on Leadership would also be considered:

	Definitely			Not at all	
Adaptive	5	4	3	2	1
Adventurous	5	4	3	2	1
Agreeable	5	4	3	2	1
Artistically sensitive	5	4	3	2	1
Assertive	5	4	3	2	1
Attentive to people	5	4	3	2	1
Calm	5	4	3	2	1
Cheerful	5	4	3	2	1
Composed	5	4	3	2	1
Conscientious	5	4	3	2	1
Conventional	5	4	3	2	1
Cooperative	5	4	3	2	1
Cultured	5	4	3	2	1
Emotionally stable	5	4	3	2	1
Emotionally mature	5	4	3	2	1
Energetic	5	4	3	2	1
Extroverted	5	4	3	2	1
Frank	5	4	3	2	1
Good-natured	5	4	3	2	1
Intellectual	5	4	3	2	1
Jealous	5	4	3	2	1
Kind	5	4	3	2	1
Mild	5	4	3	2	1
Neurotic	5	4	3	2	1
Open	5	4	3	2	1
Orderly	5	4	3	2	1
Perseverant	5	4	3	2	1
Placid	5	4	3	2	1
Poised	5	4	3	2	1
Responsible	5	4	3	2	1
Self-sufficient	5	4	3	2	1
Sociable	5	4	3	2	1
Talkative	5	4	3	2	1
Trustful	5	4	3	2	1

Someone who is rated high on Teamwork exhibits behaviors such as: cooperating enthusiastically with others to accomplish group objectives; taking full advantage of useful direction and leadership from others; putting group interests first; sacrificing personal convenience to assist others when appropriate; and soliciting suggestions from others and integrating them into effective compromise solutions.

Someone rated high on Teamwork would also be considered:

	Definitely				Not at all
Adaptive	5	4	3	2	1
Adventurous	5	4	3	2	1
Agreeable	5	4	3	2	1
Artistically sensitive	5	4	3	2	1
Assertive	5	4	3	2	1
Attentive to people	5	4	3	2	1
Calm	5	4	3	2	1
Cheerful	5	4	3	2	1
Composed	5	4	3	2	1
Conscientious	5	4	3	2	1
Conventional	5	4	3	2	1
Cooperative	5	4	3	2	1
Cultured	5	4	3	2	1
Emotionally stable	5	4	3	2	1
Emotionally mature	5	4	3	2	1
Energetic	5	4	3	2	1
Extroverted	5	4	3	2	1
Frank	5	4	3	2	1
Good-natured	5	4	3	2	1
Intellectual	5	4	3	2	1
Jealous	5	4	3	2	1
Kind	5	4	3	2	1
Mild	5	4	3	2	1
Neurotic	5	4	3	2	1
Open	5	4	3	2	1
Orderly	5	4	3	2	1
Perseverant	5	4	3	2	1
Placid	5	4	3	2	1
Poised	5	4	3	2	1
Responsible	5	4	3	2	1
Self-sufficient	5	4	3	2	1
Sociable	5	4	3	2	1
Talkative	5	4	3	2	1
Trustful	5	4	3	2	1

Someone rated high on Drive exhibits behaviors such as: actively seeking and volunteering for challenging assignments; putting in time and effort above and beyond the call of duty; always focusing attention on business at hand; working hard even when faced with difficult or demanding tasks; and volunteering for tasks even when not strictly in own area of responsibility.

Someone rated high on Drive would also be considered:

	Definitely				Not at all
Adaptive	5	4	3	2	1
Adventurous	5	4	3	2	1
Agreeable	5	4	3	2	1
Artistically sensitive	5	4	3	2	1
Assertive	5	4	3	2	1
Attentive to people	5	4	3	2	1
Calm	5	4	3	2	1
Cheerful	5	4	3	2	1
Composed	5	4	3	2	1
Conscientious	5	4	3	2	1
Conventional	5	4	3	2	1
Cooperative	5	4	3	2	1
Cultured	5	4	3	2	1
Emotionally stable	5	4	3	2	1
Emotionally mature	5	4	3	2	1
Energetic	5	4	3	2	1
Extroverted	5	4	3	2	1
Frank	5	4	3	2	1
Good-natured	5	4	3	2	1
Intellectual	5	4	3	2	1
Jealous	5	4	3	2	1
Kind	5	4	3	2	1
Mild	5	4	3	2	1
Neurotic	5	4	3	2	1
Open	5	4	3	2	1
Orderly	5	4	3	2	1
Perseverant	5	4	3	2	1
Placid	5	4	3	2	1
Poised	5	4	3	2	1
Responsible	5	4	3	2	1
Self-sufficient	5	4	3	2	1
Sociable	5	4	3	2	1
Talkative	5	4	3	2	1
Trustful	5	4	3	2	1

Someone rated high on Planning and Organizing exhibits behaviors such as: seeking and gathering as much relevant information as possible by efficiently utilizing all available resources; effectively structuring even ambiguous or complex situations and problems; anticipating obstacles and always developing flexible plans to accommodate contingencies; taking time to prioritize problems appropriately and successfully.

Someone rated high on Planning and Organizing would also be considered:

	Definitely				Not at all
Adaptive	5	4	3	2	1
Adventurous	5	4	3	2	1
Agreeable	5	4	3	2	1
Artistically sensitive	5	4	3	2	1
Assertive	5	4	3	2	1
Attentive to people	5	4	3	2	1
Calm	5	4	3	2	1
Cheerful	5	4	3	2	1
Composed	5	4	3	2	1
Conscientious	5	4	3	2	1
Conventional	5	4	3	2	1
Cooperative	5	4	3	2	1
Cultured	5	4	3	2	1
Emotionally stable	5	4	3	2	1
Emotionally mature	5	4	3	2	1
Energetic	5	4	3	2	1
Extroverted	5	4	3	2	1
Frank	5	4	3	2	1
Good-natured	5	4	3	2	1
Intellectual	5	4	3	2	1
Jealous	5	4	3	2	1
Kind	5	4	3	2	1
Mild	5	4	3	2	1
Neurotic	5	4	3	2	1
Open	5	4	3	2	1
Orderly	5	4	3	2	1
Perseverant	5	4	3	2	1
Placid	5	4	3	2	1
Poised	5	4	3	2	1
Responsible	5	4	3	2	1
Self-sufficient	5	4	3	2	1
Sociable	5	4	3	2	1
Talkative	5	4	3	2	1
Trustful	5	4	3	2	1

APPENDIX D  
NONVERBAL CUE RATINGS

Ratings of Dynamic Cues

Instructions:

Thank you for participating in this research project.

For the rating session, you will be scoring the duration and frequency of the occurrences of 5 nonverbal behaviors for 20 interviewees who participated in a mock job interview. The cues you will be rating include: gaze, smiling, hand movements, body lean, and parallel body orientation.

In this training session we will define each nonverbal cue, discuss how it should be measured, and then watch three examples of each cue on videotape. You will also have the opportunity to become familiar and practice with the device you will use to make your ratings.

The training session should take approximately 30 minutes.



## Gaze

### Operational Definition

A gaze occurs when the interviewee looks in the direction of the interviewer's face or head.

### Keys to Rating

- a) By looking at the white part of the interviewee's eyes it is easier to distinguish movement, and, therefore, when they are gazing.
- b) The interviewee's eyes do not have to be fixed to be considered gazing. In other words, a quick look at the interviewer, more like a "glance", should be counted as "gaze".

### Examples on Videotape

### Notes

## Smiling

### Operational Definition

A smile occurs when the corner of the lips are curled upward.

### Keys to Rating

- a) The teeth may or may not be showing during a smile.
- b) The interviewee can talk and maintain a smile at the same time.

### Examples on Videotape

### Notes

## Hand Movements

### Operational Definition

A hand movement occurs when the interviewee moves one or both hands, which includes the part of the body from the wrist to the fingertips.

### Keys to Rating

- a) Score one movement of the hand(s) as long as the hand is in motion. When the interviewee's hands stop moving (e.g.. rest on table or in lap) this signals the end of the hand movement.
- b) If you can not see the hands (e.g.. if they are on their lap, under the table), even though it appears as though they are moving their hands, you should not rate it.

### Examples on Videotape

### Notes

## Back/Side Lean

### Operational Definition

A back or side lean occurs when the interviewee's body is tilted in a backward or sideways direction.

### Keys to Rating

- a) Focus on the interviewee's torso, not their arms. Noting the angle of their shoulder plane is helpful.
- b) If the interviewee's body is at any angle-backward or sideways - it is a body lean.

### Examples on Videotape

### Notes

### Parallel Body Orientation

#### Operational Definition

When the interviewee's body is oriented toward the interviewer then they are in a parallel position.

#### Keys to Rating

- a) If the interviewee's shoulders are at an angle to the camera then their position is considered parallel to the interviewer.
- b) If the interviewee's shoulders are square to the camera they are at an angle, not parallel, to the interviewer.

#### Examples on Videotape

#### Notes

Interview # \_\_\_\_\_

Gaze

Gaze occurs when the interviewee looks in the direction of the interviewer's face/head.

Segment one

Seconds spent gazing \_\_\_\_\_

Frequency  
(# switches: gaze at interviewer / look away)

Segment two

Seconds spent gazing \_\_\_\_\_

Frequency  
(# switches: gaze at interviewer / look away)

Segment three

Seconds spent gazing \_\_\_\_\_

Frequency  
(# switches: gaze at interviewer / look away)

Interview# \_\_\_\_\_

Smiling

Smiling occurs when the corner of the lips are curled upward.

Segment one

Seconds spent smiling \_\_\_\_\_

Frequency  
(# switches: smiling / not smiling)

Segment two

Seconds spent smiling \_\_\_\_\_

Frequency  
(# switches: smiling / not smiling)

Segment three

Seconds spent smiling \_\_\_\_\_

Frequency  
(# switches: smiling / not smiling)

Interview # \_\_\_\_\_

Hand Movements

A hand movement occurs when the interviewee moves one or both hands, which includes the part of the body from the wrist to the fingertips.

Segment one

Seconds spent moving hands \_\_\_\_\_

Frequency  
(# switches: moving hands / not moving hands) \_\_\_\_\_

Segment two

Seconds spent moving hands \_\_\_\_\_

Frequency  
(# switches: moving hands / not moving hands) \_\_\_\_\_

Segment three

Seconds spent moving hands \_\_\_\_\_

Frequency  
(# switches: moving hands / not moving hands) \_\_\_\_\_



Interview # \_\_\_\_\_

Back/Side Lean

A back or side lean occurs when the interviewee's body is tilted in a backward or sideways direction.

Segment one

Seconds leaning \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from upright to leaning position)

Segment two

Seconds leaning \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from upright to leaning position)

Segment three

Seconds leaning \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from upright to leaning position)

Interview # \_\_\_\_\_

Parallel Body Orientation

When the interviewee's body is oriented toward the interviewer then they are in a parallel position.

Segment one

Seconds spent parallel \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from parallel position to other position)

Segment two

Seconds spent parallel \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from parallel position to other position)

Segment three

Seconds spent parallel \_\_\_\_\_

Frequency \_\_\_\_\_

(# switches: from parallel position to other position)

## Ratings of Physical and Vocal Attractiveness and Dress

### Instructions:

In this study you will be asked to make ratings of physical attractiveness, vocal attractiveness, and type of dress of 60 interviewees who participated in a mock job interview.

You will first rate interviewee's physical attractiveness. You will view a brief segment of each interview. These segments were chosen for the neutrality of the facial expression and posture of the interviewee. You will view each interviewee for 15 seconds, and then have 15 seconds to make your rating. Total time will be approximately 30 minutes.

Next, you will rate interviewee's vocal attractiveness. You will listen to a neutral portion of the interview session that was not part of the interviewees' responses to "actual" interview questions. As part of the "actual" interview, each interviewee was asked 8 interview questions. Four of these questions were past-oriented and required interviewees to tell the interviewer about a specific experience they had in the past. The other four questions were future-oriented, in which the interviewer set-up a hypothetical situation and the interviewee responded as to what they would do if in that situation.

At the end of the interview the interviewee was asked follow-up questions. One of these questions was:

"As you know I [the interviewer] asked you two types of questions, the past-oriented and the hypothetical ones. Which type do you think a job applicant would prefer? Which type do you think is more relevant for the job (i.e. from company's perspective)?"

The interviewees' response to this follow-up question is not important. You should only attend to the way in which they speak, not the content of their answer. You will hear 15 seconds of the interviewees' response, and then you will have 15 seconds to make your rating. Therefore, this part of the session should take about 30 minutes.

Finally, you will record the interviewees' type of dress. You will once again see brief segments of the interviews. This section should last approximately 30 minutes.

The interview numbers on your rating sheets represent the order in which you will see or hear the interviewees, rather than any type of identification. The order is mixed for each part so the first interviewee you see is not the first interviewee you will listen to.

Physical Attractiveness Ratings

Judge # \_\_\_\_\_

Physical Attractiveness

After seeing a still picture of the job applicant, please make your ratings on this sheet for physical attractiveness by circling the corresponding number.

Physical attractiveness: the degree of appeal of the interviewee's physical appearance:

Interview#	Very Unattractive		3	4	Very Attractive	
	1	2			5	
1.	1	2	3	4	5	
2.	1	2	3	4	5	
3.	1	2	3	4	5	
4.	1	2	3	4	5	
5.	1	2	3	4	5	
6.	1	2	3	4	5	
7.	1	2	3	4	5	
8.	1	2	3	4	5	
9.	1	2	3	4	5	
10.	1	2	3	4	5	
11.	1	2	3	4	5	
12.	1	2	3	4	5	
13.	1	2	3	4	5	
14.	1	2	3	4	5	
15.	1	2	3	4	5	
16.	1	2	3	4	5	
17.	1	2	3	4	5	

Physical attractiveness: the degree of appeal of the interviewee's physical appearance:

Interview#	Very Unattractive				Very Attractive	
	1	2	3	4	5	
18.	1	2	3	4	5	
19.	1	2	3	4	5	
20.	1	2	3	4	5	
21.	1	2	3	4	5	
22.	1	2	3	4	5	
23.	1	2	3	4	5	
24.	1	2	3	4	5	
25.	1	2	3	4	5	
26.	1	2	3	4	5	
27.	1	2	3	4	5	
28.	1	2	3	4	5	
29.	1	2	3	4	5	
30.	1	2	3	4	5	
31.	1	2	3	4	5	
32.	1	2	3	4	5	
33.	1	2	3	4	5	
34.	1	2	3	4	5	
35.	1	2	3	4	5	
36.	1	2	3	4	5	
37.	1	2	3	4	5	
38.	1	2	3	4	5	
39.	1	2	3	4	5	
40.	1	2	3	4	5	

Physical attractiveness: the degree of appeal of the interviewee's physical appearance:

Interview#	Very Unattractive				Very Attractive	
	1	2	3	4	5	
41.	1	2	3	4	5	
42.	1	2	3	4	5	
43.	1	2	3	4	5	
44.	1	2	3	4	5	
45.	1	2	3	4	5	
46.	1	2	3	4	5	
47.	1	2	3	4	5	
48.	1	2	3	4	5	
49.	1	2	3	4	5	
50.	1	2	3	4	5	
51.	1	2	3	4	5	
52.	1	2	3	4	5	
53.	1	2	3	4	5	
54.	1	2	3	4	5	
55.	1	2	3	4	5	
56.	1	2	3	4	5	
57.	1	2	3	4	5	
58.	1	2	3	4	5	
59.	1	2	3	4	5	
60.	1	2	3	4	5	



Vocal Attractiveness Ratings

Judge # \_\_\_\_\_

Vocal Attractiveness

After listening to the interview tape for each applicant, please make your rating on this sheet for vocal attractiveness by circling the corresponding number.

Vocal attractiveness: the degree of appeal of the interviewee's voice:

Interview#	Very Unattractive				Very Attractive	
	1	2	3	4	5	
1.	1	2	3	4	5	
2.	1	2	3	4	5	
3.	1	2	3	4	5	
4.	1	2	3	4	5	
5.	1	2	3	4	5	
6.	1	2	3	4	5	
7.	1	2	3	4	5	
8.	1	2	3	4	5	
9.	1	2	3	4	5	
10.	1	2	3	4	5	
11.	1	2	3	4	5	
12.	1	2	3	4	5	
13.	1	2	3	4	5	
14.	1	2	3	4	5	
15.	1	2	3	4	5	
16.	1	2	3	4	5	
17.	1	2	3	4	5	

Vocal Attractiveness: the degree of appeal of the interviewee's voice:

Interview#	Very Unattractive		3	4	Very Attractive	
	1	2			5	
18.	1	2	3	4	5	
19.	1	2	3	4	5	
20.	1	2	3	4	5	
21.	1	2	3	4	5	
22.	1	2	3	4	5	
23.	1	2	3	4	5	
24.	1	2	3	4	5	
25.	1	2	3	4	5	
26.	1	2	3	4	5	
27.	1	2	3	4	5	
28.	1	2	3	4	5	
29.	1	2	3	4	5	
30.	1	2	3	4	5	
31.	1	2	3	4	5	
32.	1	2	3	4	5	
33.	1	2	3	4	5	
34.	1	2	3	4	5	
35.	1	2	3	4	5	
36.	1	2	3	4	5	
37.	1	2	3	4	5	
38.	1	2	3	4	5	
39.	1	2	3	4	5	
40.	1	2	3	4	5	

Vocal Attractiveness: the degree of appeal of the interviewee's voice:

Interview#	Very Unattractive				Very Attractive	
	1	2	3	4	5	
41.	1	2	3	4	5	
42.	1	2	3	4	5	
43.	1	2	3	4	5	
44.	1	2	3	4	5	
45.	1	2	3	4	5	
46.	1	2	3	4	5	
47.	1	2	3	4	5	
48.	1	2	3	4	5	
49.	1	2	3	4	5	
50.	1	2	3	4	5	
51.	1	2	3	4	5	
52.	1	2	3	4	5	
53.	1	2	3	4	5	
54.	1	2	3	4	5	
55.	1	2	3	4	5	
56.	1	2	3	4	5	
57.	1	2	3	4	5	
58.	1	2	3	4	5	
59.	1	2	3	4	5	
60.	1	2	3	4	5	

Dress Ratings

Judge # \_\_\_\_\_

Interview # \_\_\_\_\_

Dress

After seeing a still picture of the job applicant, please make your ratings on this sheet by circling the corresponding number.

Dress: categorized according to type and color:

Males:

Type of Clothing

- 0 = other / casual shirt
- 1 = no jacket / dress shirt
- 2 = blazer or suit coat

- 0 = no tie
- 1 = tie

Dominant Color

- 1 = white or light (pastel)
- 2 = medium darkness (blues, khaki, light gray)
- 3 = dark (dark gray, navy, black)

Females:

Type of Clothing

- 0 = other / casual shirt
- 1 = no jacket / dress or blouse
- 2 = blazer or suit coat

- 0 = no accessories
- 1 = one or more accessories  
(earrings, necklace, scarf, pin)

Dominant Color

- 1 = white or light (pastel)
- 2 = medium darkness (blues, khaki, light gray)
- 3 = dark (dark gray, navy, black)

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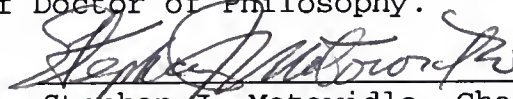
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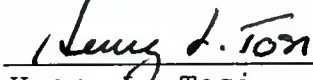
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Jennifer R. Burnett was born in Abington, Pennsylvania and grew up in Jacksonville, Florida. In 1988 she graduated magna cum laude from Rollins College, Winter Park, Florida, with a Bachelor of Arts degree in psychology. After completing her doctoral work in the Department of Management, College of Business Administration, at the University of Florida she will take a position as Assistant Professor of Management at the University of Alabama at Birmingham.


I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

  
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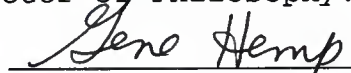
  
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